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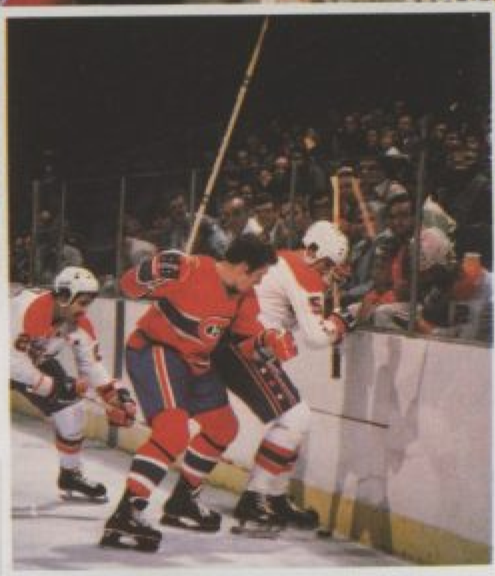
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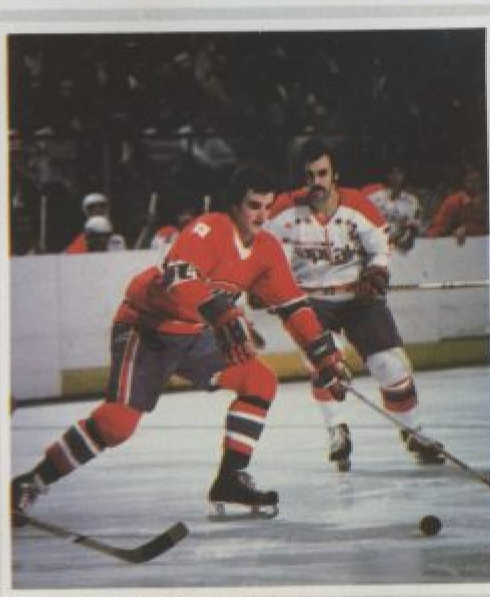
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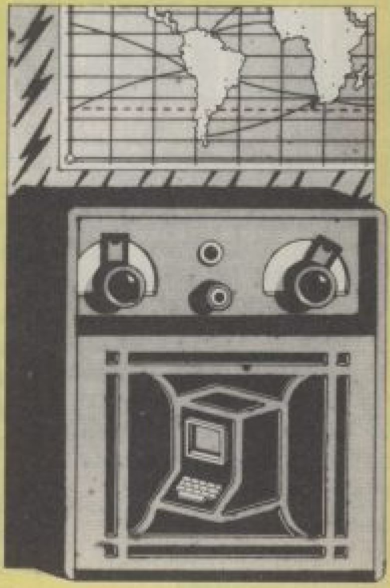
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COMMODORE user

MARCH 1985







REGULARS



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NEWS

COMMODORE IN VEGAS

A special report from Dan Gutman

I hope you're ready for World War II, 'cause it's about to happen. I just got back from the semi-annual Consumer Electronics Show extravaganza in Las Vegas, and I'll tell ya — Atari and Commodore are about to go at it again. Just like in the old days.

Seeing those two heavyweights face off at adjacent booths was almost as exciting as hitting my number at the roulette tables. And seeing old Commodore boss Jack Tramiel strutting around the Atari booth like he owned it (he always did, really) was like Ronald Reagan taking over as head of the Russian Politburo.

A few years back, you'll remember Jack let the Commodore Vic-20 and Commodore 64 loose on the world, slugging it out with the Atari 400/800 and 800XL. Jack and Commodore won World War I. Now we've moved to the next generation machines — computers with real muscles — and Commodore and Atari are going head to head all over again. I'm telling you, it's so exciting, my fingers are slipping off my Macintosh keyboard.

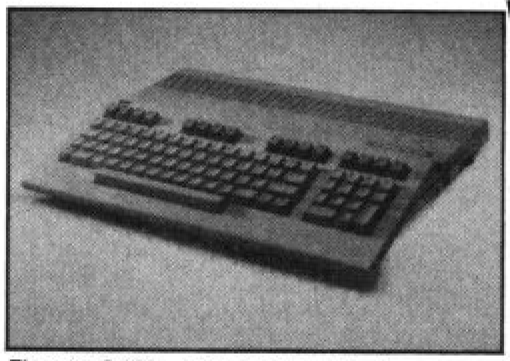
New machines:

But seriously, everybody I know just about fell off their chairs when we found out that the new Commodore 128 is going to be fully compatible with the Commodore 64. It's a miracle! They actually listened to us for a change. We can buy the 128 (that's 128K, of course) without having to junk all the software we bought for the 64. It's about time. Actually, we're getting to the point that these guys *have* to make their computers compatible. Tossing a Vic-20 in the trash-can wasn't such a big deal — the machine was practically a toy. But as computers get more powerful, people will refuse to dispose of them and buy a whole new system so easily.

C-128 revealed

Anyway, here's the specs on the C-128 (has a nice ring to it, doesn't it?). It's expandable to 512K, comes with 40/80 column switch, runs all CP/M software and all 6,000 or so 64 programs, is compatible with all 64 peripherals, has a nice 92-key keyboard with a 14-key numeric keypad, and eight programmable function keys.

Enough numbers, already. It sounds like the thing *cooks*. If Commodore can deliver the 128 when they promise (Spring in the States), at the price that they're hinting (under $300), they may



The new C-128 — more memory than two elephants?

have another monster success on their hands. Long live the Commodore 64! They're already talking about cutting its price drastically when the 128 comes out. I should also mention that the 128 will have an optional mouse control and a new *FAST* disk drive — the 1571.

Lap-held Commodore

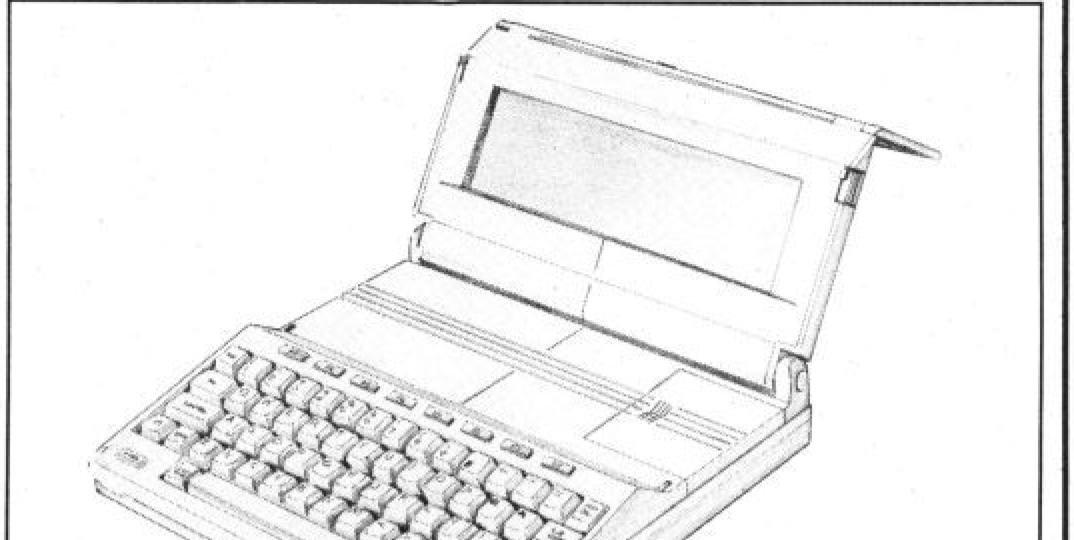
And there's also a really nice looking "lap" machine — the LCD Portable — which should be out soon in the States for just $500. This one weighs just three pounds, has 32K, a built-in modem, and is compatible with all Commodore peripherals. It comes with built-in software too — word processing, file management, spreadsheet, address book, scheduler, calculator, memo pad, and communications software. What more does a guy want?

So what does Jack have to say about all this? At the Atari press conference, somebody asked Tramiel what he thought of Commodore's new machines and he said, "I didn't *see* any new machines!" What a comedian!

Jack put on quite a show of his own. The guy bought Atari just six months ago, and he's already got a truckload of products to show off. The most exciting was his 130ST and 520ST computers, which were immediately dubbed "Jackintosh." That's right. Jack must have sat down with his engineers and said, "I want a Macintosh and I want it cheap," because that's exactly what they gave him. The screen features movable windows, icons, pull down menus, and you control them all with the mouse. If that don't read Macintosh, I don't know what does. It even has a built in Breakout game.

More importantly, the thing is in colour (Mac is black and white) and the price is supposed to be between $400 and $600. I've been saying all along that if somebody could come out with a Macintosh for less than $1,000, they'd sell millions of them. Now they have. Atari's only problem is that the ST line isn't compatible with anything in the known world, so there's no soft-

Commodore LCD portable for boffins on the move.



COMMODORE IN VEGAS continued

ware for it yet. Commodore has a big leg up on them in that department.

Anyhow, it's a World War II soap opera, folks. Will Commodore whip Atari again? Or will Jack turn the tables on his old comrades and drive them to bankruptcy, as he nearly did to Atari last time? And what about Apple? Will they be forced to lower the price of the Macintosh in order to fight off the Jackintosh? Or will IBM march in and drive them all out of business? Tune in next time for the next bulletin from the front.

Don't wait for me, Amiga

Wait a minute. Aren't we forgetting something? What about the Amiga? For the past six months we've been hearing about this terrific computer that does everything but mow the lawn for you. It was nowhere to be seen at the Commodore booth, and they made no mention of it at their press conference (which was held at a restaurant owned by Liberace, you should know).

I saw that thing running with my own eyes at the last CES six months ago in Chicago. It was in a private room at the Amiga booth — this was just before the whole company was purchased by Commodore. Are you saying the thing *still* isn't ready to show? What's taking so long? By the time they release it, it'll be obsolete!

Well, maybe Commodore didn't want to take the spotlight away from the 128, which really *is* an exciting development. You can't give the people too much good news at the same time. Don't be surprised if Commodore pulls off a surprise introduction sometime in the next few months. I'll keep my eyes open. See you next time!

● *Great to hear about the new developments in the States. But when do the machines reach Britain? Commodore UK is being characteristically tight-lipped. So we'll just have to twiddle our thumbs for a while . . .*

STOP PRESS

Commodore has slashed the price of the Plus/4 from £299.99 to a bargain-basement £149.99. Its action is a direct response to the £50 cuts announced just weeks earlier by arch rivals Sinclair and Acorn on the Spectrum and Electron. According to Commodore UK boss Howard Stanworth, the recent price war has "opened up a gap which we are moving fast to fill".

But there are other gaps: with Acorn's finances looking decidedly shaky and the BBC micro lying dormant in many dealers' shops, it's plain that Commodore intends to forage in the lucrative educational market. "The Plus/4 is exactly the right machine for schools and now offers better value than the BBC micro", says David Gerrard, Commodore UK marketing manager.

But does this mean the demise of the downmarket Commodore 16, which is now only £10 cheaper? "The C-16 sells as a complete Starter Pack. It's now the right product for the first time user", says Gerrard. "We don't assume the Plus/4 buyer is buying for the first time." Plus/4 production is being significantly stepped up at Corby, where over 100 redundancies were announced just after Christmas.

LOOK, WHO'S HERE

The BBC are extending their range of software to Commodore computers. Their text adventure *Dr Who and the Warlord*, previously only available for the BBC model B, will be released on the 64 in the Summer.

The game, based on a completely new plot written by an ex-producer, has two halves, each covering some 250 locations. The first part takes place on an unknown planet, where, to find the Doctor, you must outwit lurking androids and, worst of all, King Varaga's Blood Guards.

In the second part you are transported back in time by the Tardis to the Battle of Waterloo. To survive you must defeat not only Napoleon, but the evil Warlord himself.

Features of the game include real time, a help facility and the ability to save your last position and stop the clock if you need a teabreak. A Novaload system will enable you to get back into it as fast as possible.



"We caught her playing Jet Set Willy with the Tardis."

● Shorts ●

Mini Office for Commodore: according to Database Software boss, Derek Meakin, the *Mini Office* business program has broken all records by selling more than some top-ten computer games. That's not surprising since the package costs a mere £5.95 on cassette yet consists of a wordprocessor, database, spreadsheet and graphics. There's also a 32-page manual — what more do you want? Mini Office is now available on the Commodore 64 and looks like selling just as well. Will it really help run your business? We're looking into it. Database is on 061 456 8383.

ROCKY HORROR



Dammit, Janet, we're in a computer game.

Calling all Transylvanian transvestite rockers! Yes, it's the software game of the film of the hit musical. The *Rocky Horror Show* from CRL is a completely graphic adventure.

Each screen of the adventure will be an illustration in its own right. The player will be able to adopt the persona of either of the two love-struck protagonists, Janet and Brad. You must save your partner from the perverted clutches of Frank N. Furter and escape from the Palace.

The Commodore 64 version will be released towards the end of March and will feature music from the show. So get ready to do the Time Warp. Don't be put off if you haven't heard of the Rocky Horror Show because CRL promise ". . . thrills and chills, romance with gorgeous gals and hunky guys". The Rocky Horror Show will sell for between £8.95 and £9.95 on cassette.

Shorts

Getting the hump: Ocean has resolved its differences with Software Projects over who has rights to the "Hunchback" character that's had Ocean laughing all the way to the bank. Software Projects has accepted Ocean's copyright and has agreed to licence the unfortunate rope-swinger for its new and bizzare title, "*Hunchback at the Olympics*". Olympic bell-ringing?

Shorts

New Addiction: Kevin Toms, boss of Addictive Games who wrote the successful *Football Manager*, has come up with yet another quest-for-success game, this time called *Software Star*. Your aim is to steer your software house along the precarious path to success, making the right decisions and solving inevitable problems. The Commodore 64 version costs £7.95.

Shorts

16 and Plus/4 compatibility: Already two companies have thwarted Commodore's malicious aim to make Vic and 64 peripherals incompatible with the new C-16 and Plus/4 machines. Impex Software has produced a plug adaptor, costing £2.25, that permits any joystick with the 9-pin 'D' plug (used by the Vic and 64) to fit the new machines. The same type of device, more expensive at £4.45, is also being sold by Euromax Electronics, which goes one step further by offering a Commodore Datasette adaptor, costing £5.25. More details from Impex on 01-900 0999 and Euromax on 0262 601006.

Shorts

Bridge that gap: Alligata has announced that it is to launch an improved version of its *Contract Bridge* game for the Commodore 64. For those of you who've got the old version, Alligata will exchange a new one for a mere £1 handling charge. The new version is called *Bridge 85* and sells for £9.95 (tape) and £11.95 (disk). Details on 0742 755796.

Commodore means business?



The Commodore PC, hoping to take a bite out of the 16 bit business market.

Whilst people flocked to see Commodore's new 'home' computers at CES in Las Vegas (see page 5), a little less attention was grabbed by the new Commodore Personal Computer, displayed for the first time at the recent 'Which Computer?' Show. Despite its mammoth success with smaller machines, Commodore still lusts for a share in the 16-bit business market, which has already been stitched up by the IBM PC and the 'PC clones'.

The usual reticence pervaded Commodore's stand but a few snippets were to be gleaned: the PC (surprise, surprise) will be "100 per cent IBM compatible", it uses an Intel 8088 processor (made by Commodore under licence) and has two half-height 360K disk drives — nothing special there. There's also space in the (rather large) system box for a Winchester.

No prices and no dates for availability yet, though. But according to Commodore marketing manager, David Gerrard, it will be a case of "the latest technology at the most competitive price". A few people seem convinced, anyway. Gerrard reports that Northamber, Norbrain and STC have already signed distribution deals.

SOFT-AID GAMES FOR ETHIOPIA

Several leading computer games firms have banded together to do their bit to raise money for Ethiopia by producing a compilation tape of computer games — called Soft Aid.

The project is being co-ordinated by Quicksilva boss — Rod Cousens, who has so far signed up an impressive list of games to go on the tape. Quicksilva themselves are donating *Ant Attack*, and *Fred*, Fantasy are to donate *The Pyramid*, *Falcon Patrol*. Also on offer are *Sorcery* from Virgin, *Kong* or *Hunchback* from Ocean, and *Gum Shoe* from A&F.

Other companies still to announce a title are Beyond, Melbourne House, Psion, and U.S. gold.

The tape will be recorded on both sides and will retail at £9.95, initially only for the Commodore 64 and Spectrum 48K.

Rod Cousens told the User: "We have spoken to Bob Geldof of Band Aid and he is all for it . . . we are hoping to get Bob's help to promote the tapes."

W.H. Smith have agreed not to charge their normal mark-up on the tape, and several magazines, including *Commodore User*, have agreed to run advertisements for the tape free of charge.

Commodore are organizing their own fund-raising campaign for Ethiopia. Each new 64 sold over the Christmas period contains a guarantee card. For each card returned Commodore have pledged to donate 25 pence.

A spokesperson for the company said that the £10,000 target Commodore had set themselves had been reached.

One of the computer games business trade journals — Computer Trade Weekly — has launched a fund raising campaign by asking software houses to donate £500 each. The fund currently stands at £4,700 and will receive a further boost when proceeds from Gremlin Graphics latest game — a children's adventure called *Tinder Box* — are donated to the CTW fund.

Cheetahsoft are also to donate profits from their *Perils of Bear George* game to the Ethiopian Famine Appeal.

MAKING SPEECHES

A new speech synthesiser for the Commodore 64 is being produced by Cheetah Marketing, despite the fact that Currah Computors, who first marketed a similar device called Speech 64 have now gone bust.

Like Speech 64, the Speech Synthesis Module from Cheetah uses the allophone method and sells at a similar price, a little under £30.

How do Cheetah expect to avoid the same fate? According to a spokesperson, Currah got their sums wrong and over-produced. Cheetah are more confident because they have similar products available for the BBC and the Spectrum and they are reportedly selling well. Advance orders are already in the bag with some major distributors.

But hold, the Currah Speech 64 module will not lay down and die. Welwyn Systems, its manufacturer, has just announced it is to market the product directly. And they've got Steve Currah, erstwhile founder of Currah Computors to join their U.S. office in Boston.

To confuse the matter further, DK' tronics has announced that it will be manufacturing and marketing the device, having gained the rights after months of negotiation with the receiver.

PROFILE: BRUCE CARVER

This month we introduce another new series: Programmer Profile. We kick off here with a look at the idiosyncratic talent of American, Bruce Carver, whose Access games are riding high in the software charts.

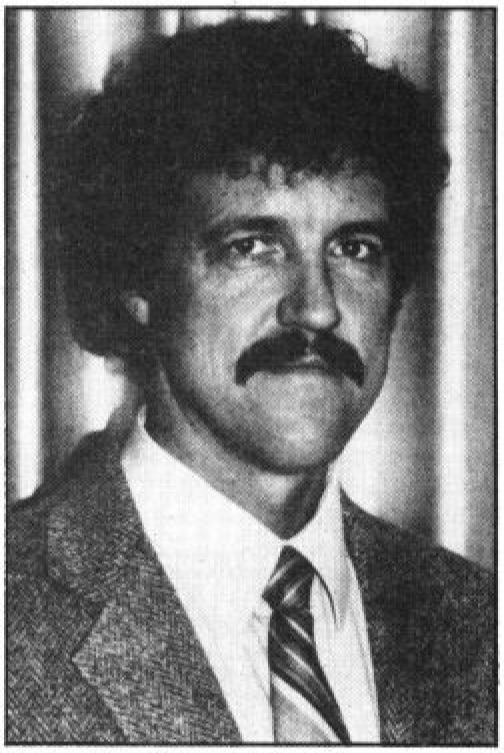
Bruce Carver's Salt Lake City home is a long way from the barbed wire of the Iron Curtain — though the Soviet menace is never far from his mind.

"I believe the Soviets intend to spread their influence around the globe . . . witness Afghanistan." Not a surprising view of world politics from a practising Mormon who describes himself as a "right wing republican" and is the author of the controversial, and brilliant, *Raid Over Moscow*.

Raid assumes that there has been a world agreement to abandon nuclear arms. But the sneaky Soviets retain some of theirs and let fly with a volley of nukes at key American cities. It's up to you to save Uncle Sam at the controls of the sophisticated Stealth Bomber — launched from a Star Wars space station. Your mission is to fly undetected to the Russian missile bases, destroy them, and fly on to Moscow to knock out the Soviet defence centre in the Kremlin.

Carver has answered his critics — amongst them are W.H. Smith who refused to have *Raid Over Moscow* on their shelves. "I don't apologise for it . . . We believe it's a very believable scenario." "If they could take over without a World War III they would," he adds.

Politics aside — anyone who has played *Raid Over Moscow* will know that it is a good game in its own right, irrespective of the, to some, distasteful scenario. And talking to Bruce Carver you get the distinct impression that he is more interested in computer games than in American-Soviet relations.



Bruce Carver: Do Mormons and missiles mix?

He needs to be — running one of the most successful smaller games houses in the intensely competitive American software business. "We don't have the resources to spend on massive advertising campaigns . . . our games stand on quality" . . . "*Beach-Head* and *Raid Over Moscow* took four months each to program, six day weeks, ten hour days" . . . "sometimes when I'm working on a program I wish that I could bunk off, or go skiing, but I know I've got to stick at it," says Carver.

The evolution of a Bruce Carver game is akin to the development of a film, or play, rather than what you expect from a computer program.

Just like a film director, Bruce starts off with a detailed story board — a sketch of all the games screens showing all aspects of the game-play. Next stage is to produce a computer graphics story board — this is done using a Koala Pad — though the pad is not used for the game's final graphics.

These are programmed from a third story board drawn by Access artists on to a specially designed grid which defines each graphic pixel by pixel. Graphics are all important in Carver's games: "I guess I am something of a frustrated artist". Again borrowing from techniques developed in the film world Carver makes models and photographs them in various positions to provide a blueprint for the animation. This is how the impressive aircraft carrier bombardment scene from *Beach-Head* was developed.

The war theme, started in *Beach-Head* and carried on in *Raid Over Moscow*, will also be the subject of the next game from the Carver keyboard — *Beach-Head II*. This could well be the last of the big guns games though as Carver is anxious to look at something completely different for his next game.

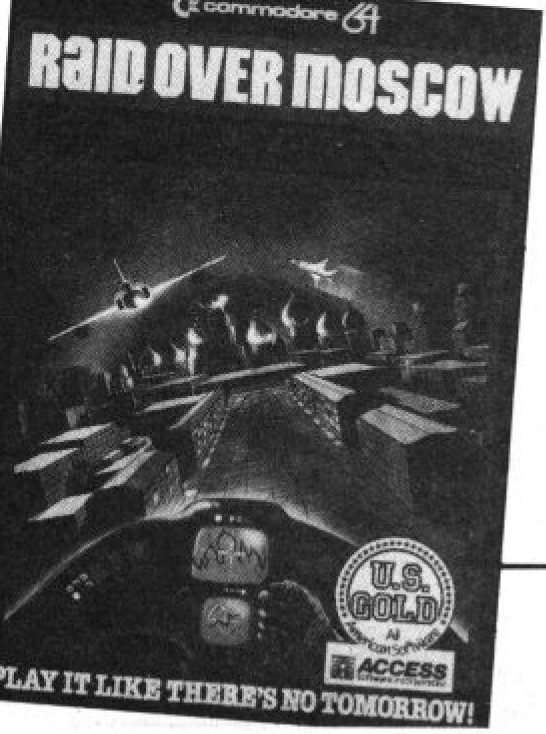
When asked to name his favourite games Carver is quick to point out, "I prefer programming to playing the games. By the time an Access game is complete I know it so well — all the possibilities — that playing it is the last thing I want to do . . .

"I play other people's games, the head to head variety are my favourites, games like *Intellivision Baseball*, One on One . . . I also enjoyed *Ghostbusters*, especially having seen the film six times, and the new Epyx game — *Impossible Mission*."

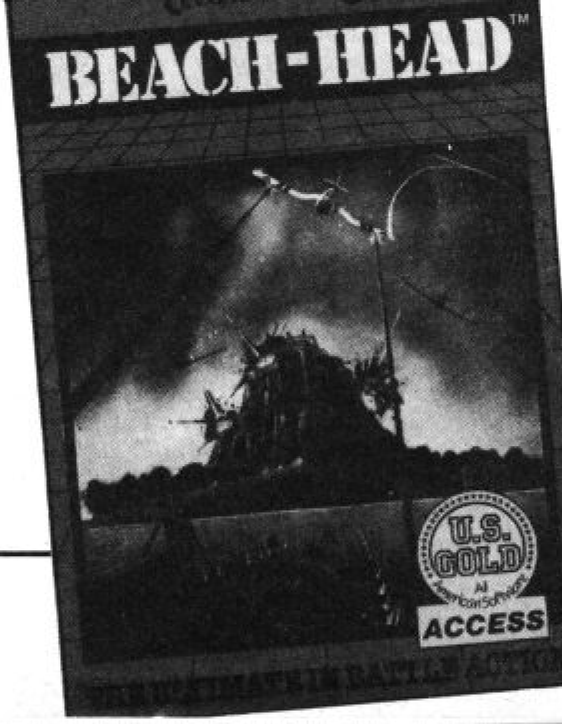
And the future of computer gaming? "The games will be around for ever — but not at the rate they are being launched today. People are now realising that there is more to be done with a computer and they will begin to look for software that will help them realise their own creativity," says Carver.

Bruce Carver's Access Software has bucked the trend in the US that the games market is controlled by a dozen or so enormous software houses. Beach-Head I and II, and Raid Over Moscow are distributed in the UK by U.S. Gold.

Raid over Moscow: Hot software for the Cold War.



Beach-Head, the Falklands were never like this.




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The artifact is just too tempting. Sure, no one has ever returned with it but they didn't have your brains and courage.
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GOLD
IF YOU
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It's a range of top quality software from Commodore designed to make the most of your Commodore 64's capabilities.

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New packages will be introduced to the Gold Medallion range every so often, but only if they are really exceptional. They'll definitely be hard soft to beat.

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And it won't be long before you appreciate Music Maker's many advanced capabilities: you can synthesise many musical instruments, even create your own 'synth' electronic sounds, choose between monophonic or polyphonic play, summon up pre-programmed rhythms and bass accompaniments, and more.

Music Maker is the first in a series of packages which will fully exploit the Commodore 64's outstanding musical capabilities.

On disk or cassette, with music keyboard, a clear and concise manual, and song book, for just £29.95.

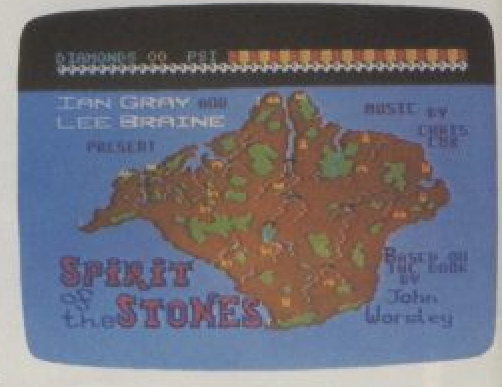
SPIRIT OF THE STONES

It's a treasure hunt for 41 real diamonds hidden somewhere on the Isle of Wight.

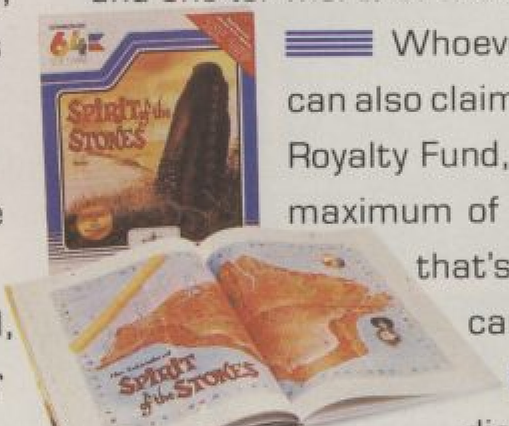
Only one man knows where they are, and he's not saying.

All that he has to say he's said already – but in the form of riddles, clues and puzzles.

Solve the puzzles in the Spirit of the Stones program and you'll find it much easier to solve the puzzles in the Spirit of the Stones book.



Solve the puzzles in the book and one (or more) of the diamonds can be yours.



Whoever discovers a diamond can also claim his or her share of the Royalty Fund, which could grow to a maximum of £1 million. It's a game that's as entertaining as it can be rewarding.

On cassette or disk, £14.99.

INTERNATIONAL FOOTBALL

Already it's recognised as the best football game ever seen outside of Wembley.

It's startlingly life-like, and gives you near perfect control of the players.

You can kick the ball, dribble it, pass it,

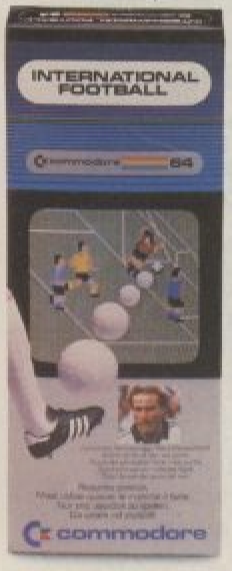
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MEDALLION. HAVEN'T GOT IT AVEN'T GOT IT.



head it or even throw it in from the touch-line. And every time you belt the ball into the net, the crowd cheer wildly.

How often you score depends on how good you are, and also at what level you choose to play.



There are 9 levels you can play against the computer. Or you can play a friend.

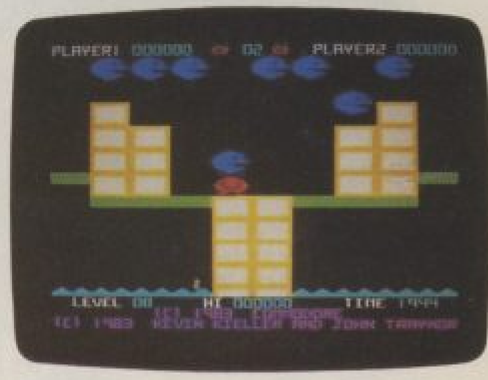
International Football is a real test of skill, dexterity and speed. It is certain to drive you football crazy.

On cartridge, £14.99.

JACK ATTACK

There's no other game like it. It has been voted by the U.S. magazine 'Electronic Games Hotline' as a 'must buy.'

Jack Attack is about squashing heads. It's an addictive game, a game of strategy and cunning. We can almost guarantee it will turn you into a head-case.



To stay alive, Jack must leap aside from collapsing bridges and crashing blocks, and at the same time he must make sure he doesn't fall into the water... and drown.



And that's the easy bit.

Because everywhere Jack goes he's dogged by jolly bouncing sadistic heads that are out to nut him.

He has to squash their heads before his is squashed.

And Jack can't afford to lose his head because we've only given him three, and when they've gone, he's gone...

Jack Attack is available for both the Commodore 16 and Plus/4. On cartridge £14.99.

commodore
HARD SOFT TO BEAT

SELECTED TITLES AVAILABLE FROM BOOTS, WH SMITH, WOOLWORTH, SPECTRUM, JOHN MENZIES, OTHER LEADING RETAILERS AND SPECIALIST COMPUTER STORES.

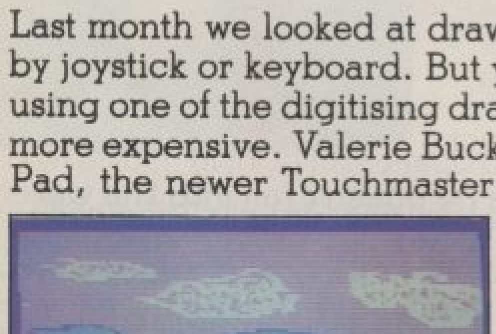
TAKE THREE TABLETS...



Main pic — Super Sketch has winged its way across the Atlantic courtesy of Stonechip Electronics.
Below — Super Sketch uses an on-screen 'menu' system which displays drawing options down the left side of the screen — and the menu can be cleared to display the whole screen.

Drawing tablets for the 64 reviewed

Last month we looked at drawing and graphics software for the 64, which are controlled either by joystick or keyboard. But you might prefer to draw on a flat surface with a real pen or stylus, using one of the digitising drawing tablets now available. The only problem is that they're rather more expensive. Valerie Buckle has looked at three current offerings: the now-established Koala Pad, the newer Touchmaster, and the latest to arrive, Super Sketch. **By Valerie Buckle.**





A graphic art package is simply a piece of software that lets you copy or design pictures on your screen without needing to write a program. They all use either keyboard, joystick or lightpen to control the cursor. Digitising drawing tablets are more sophisticated because they let you draw on a flat surface with a stylus whose movements on the board control the on-screen cursor.

So how does a digitiser work? It's a flat board capable of transmitting to the computer the position (x,y coordinates) of the stylus on its surface. But there are differences in the way each package both senses and transmits that information. All three use multicolour mode which gives 16 colours, uses up to 9K of memory and allows four colours in each 8 by 8 bit character square. So let's load up the first device.

KOALAPAD

The **KoalaPad**, from *Audiogenic*, costs £79.95 and is already well-respected by professionals and amateurs alike. It consists of a small digitising tablet, stylus, cartridge containing the KoalaPainter program and two manuals. Newer versions of the program come only on disk or cassette. The tablet is well-designed, being slim and light, and houses a touch-sensitive pad on its surface which means that younger artists can use their fingers as a stylus (although this results in a considerable loss of accuracy). The two pushbuttons on the top of the tablet control the operation of the program. So, to use the KoalaPad, you merely plug it into the joystick port 1 and off you go.

The title screen of KoalaPainter is replaced swiftly by the main menu which displays the various functions

with small, labelled icons. To choose a function, you simply move the stylus to the preferred icon (the stylus is indicated on the screen by a small arrow) and press either button. The menu includes all the major functions, brush options and colour palette. A choice of eight brush styles is available, including a combination of five pixels which produces spectacular effects on the screen. The palette contains sixteen solid colours mixed with the current foreground colour.

This appears to be an attempt at colour mixing and, as such, is not of the same high standard as much of the rest of the program. The main problem is that the blocks of colours suffer from the effects of chroma distortion which results in vertical stripes down the mixes. (This could have been overcome by using horizontal stripes instead of chequer-boarding.) Apart from this, KoalaPainter handles the low colour resolution in multicolour mode extremely well and any colour changes can be checked using zoom mode.

Start drawing

To begin drawing with KoalaPad, you simply depress one of the buttons while moving the stylus around the surface of the tablet. Drawing is terminated by releasing the pressure on the button. As the area used for drawing is rather small, slight movements of the stylus create many dots so the draw mode does not, unfortunately, prove to be very accurate.

However, this is easily overcome by using the superb Zoom mode for editing. This allows you to magnify a specified rectangle of the design on the lower half of the screen. It would have been nice to have a fully scrolling Zoom feature but, by moving the cursor to another part of the picture on the actual size portion, the zoom will shift to magnify the new area.

KoalaPainter has most of the other commands you would expect from a graphics package of this price including Mirror, Circle, Fill and Line. But it is the extra thought that has gone into the programming which makes this such a joy to use.

I particularly appreciated the transport feature which enables you to set the size of Circle, Line, Disc, Box and Frame, stretching them like a piece of elastic until you are happy with the effect, and then move them around the screen before eventually fixing in place with a push of one of the buttons.

Seeing double

Two drawing screens are available and the Swap command allows you to toggle between the two. The Copy feature makes it possible to transfer a shape or design from one screen to the other, and, most importantly in my view, it doesn't copy the background colour. Most systems simply copy a rectangle of pixels but this feature allows you to copy an arbitrary shape.

Another well-designed feature is the very fast Fill routine. The Oops command will cancel the last command, of particular use for breaking into an unwanted fill (most other packages lock the peripherals out during the fill process). Storage and retrieval are adequately explained in the manual and present no problems.

A Basic program is provided for LOADing and displaying pictures from disk which have been created with KoalaPainter, so budding games programmers can create their own games using this package. To use the digitiser directly from Basic, all that is necessary is to PEEK the X and Y values from the analog-to-digital converters on joystick port 1. (Note that only 8 bits are available from specifying each axis hence the horizontal resolution of the digitiser is less than that of the bit-mapped screen.)

Conclusion

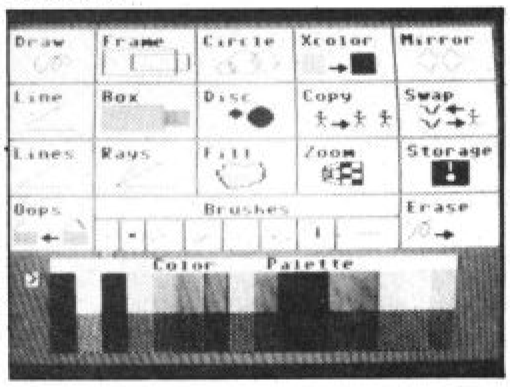
Overall, KoalaPad is easy to use, being entirely cursor menu driven, you can sit in your favourite armchair and create masterpieces in comfort. It's expensive but represents good value for money. My only real criticism is of the lack of printer dump although the new versions do have this facility. I would recommend this product to both the occasional user and the more committed graphics expert.

TOUCHMASTER

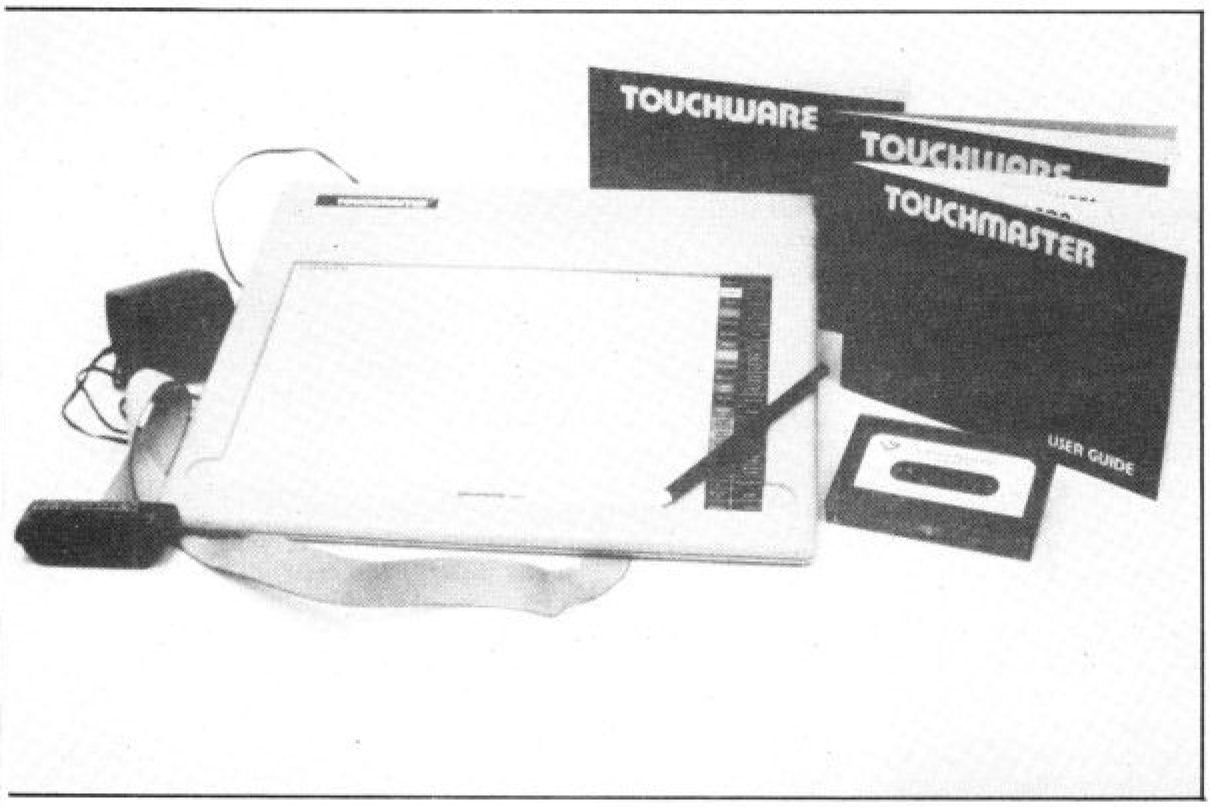
Touchmaster is much more expensive at £149.95. I was initially impressed by the size and design of this tablet. A4 in size, Touchmaster has a pressure-sensitive surface with a plastic overlay which has the control areas located at the right-hand side: the rest of the surface is the drawing area. Also included in the package are a power supply, stylus, interface, manuals and MultiPaint software.

Two problems confronted me on loading up: the manual refuses to tell you which way round to insert the interface into the back of the 64, then I couldn't load the graphics software from cassette using the commands in the manual. Although the correct name is obvious from the information which appears on the screen, this kind of fault is inadmissable in such a pricey package. Not surprisingly, I was by this time a little sceptical of the claims in the blurb, and, I'm afraid to say, the rest of my

The main menu on KoalaPad displays the various drawing functions with small, labelled icons.
The highly successful KoalaPad package is distributed in the UK by Audiogenic. Its drawing software comes on tape, disk or cartridge.







experiences with Touchmaster did not change my first impressions.

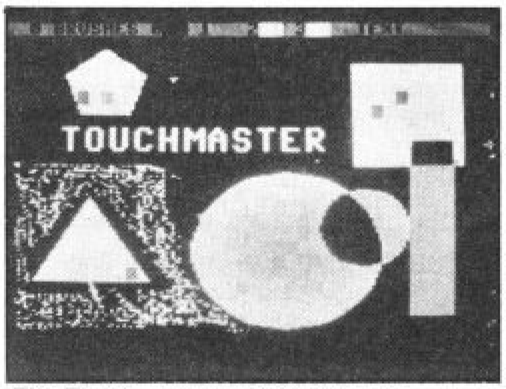
Like KoalaPad, Touchmaster is entirely cursor menu driven, the difference being that with Touchmaster the controls are displayed on the overlay that fits over the tablet. Pressure from the stylus on the overlay allows you to select from a large range of graphics commands and your current choices are displayed on a line at the top of the screen.

Brush strokes

The three foreground brushes can be used in a wide range of styles although none appealed to me as much as the styles available with KoalaPad. Brush widths can also be changed although I did not find a great deal of difference despite the fact that there are nine choices. The standard sixteen colours are available, but there's no attempt to mix the colours, nor are there any patterns provided. The range of brushes allows you to draw reasonably complicated designs but you must remember that you can only use each paintbrush once in each character square or you will see the colours changing before your eyes.

Touchmaster has most of the options you would expect such as a fast Fill, two types of Circles, and a sophisticated Polygon routine which draws shapes of three to nine sides. The Draw command suffers from a lack of accuracy which rules out using this program for anything more than entertainment. Furthermore, the shape commands are not elastic as in KoalaPad and I found it quite difficult to set suitable ranges with no guidelines on the screen.

The one command I found particularly strange was Zoom. Normally one of the most useful features of any graphic art package,



The Touchmaster pad features an impressive drawing surface but it's the most expensive device under review.

Touchmaster will let you draw the usual variety of shapes and also permits text to be incorporated in your designs.

this command appears to blow up the *most recently* drawn design and overlays it at the current cursor position. Confused? So was I! The manual doesn't explain this and experimentation is the only way to fully understand this and most of the other commands. There is, however, a very useful Text mode which allows you to type in text from the keyboard on to the screen in any colour.

Load and Save

Load and Save facilities on Touchmaster are simple to use although, as with earlier versions of KoalaPad, there is no printer dump facility. Using the program provided in the user manual, the digitiser can be used from Basic to create your own drawing program, for example. The software interface between the digitiser and the Commodore 64 is quite complicated. To sample a single coordinate pair five PEEKs and ten POKEs are necessary. Serious use of the Touchmaster package is limited by the fact that designs can only be LOADed back into the Touchmaster program.

Conclusion

To sum up, I was not impressed by Touchmaster. The manuals proved to be misleading, if not incorrect, and the MultiPaint documentation is inadequate. The tablet itself is comfortable to use and I'm all in favour of alternatives to keyboard control but this must be backed up with software of a good standard, particularly at this price. Touchmaster do advertise a large range of accompanying educational software (Touchware) which will, no doubt, broaden its appeal. When compared with KoalaPad, Touchmaster is poor second best, no recommendation at this price!

SUPER SKETCH

Super Sketch emanates from the American Personal Peripherals Inc. It costs £59.95 and is imported by Stonechip Electronics. It's a mechanical device in which the stylus is connected to a pair of potentiometers, effectively communicating its X and Y coordinates to the computer. Despite looking cumbersome, it was found to give a greater degree of accuracy than the electrical system used by the other two packages.

The package consists of the tablet, manual and starter kit and Graphics Master art program on cartridge. The tablet is made of a scratch resistent plastic, the lower part of which is the digitising surface (slightly less than A4 in size) over which the stylus is moved by means of a handle connected to the control arm. The arm passes through a box containing the two potentiometers and associated electrickery. Five chunky push buttons on the top of this box control the system.

Instructions for connecting up the tablet (via joystick port 1) and graphics program to your Commodore 64 are fully covered in the manual which also explains most of the features of the software very comprehensively.

Getting started

Switching on the computer, you press the menu button on the top of the tablet to gain access to the main menu. This appears on the left hand side of the screen, leaving most of the drawing area visible. The main menu contains several standard commands such as Clear screen, Draw, Erase, Oops and Fill (fast but not perfect), as well as housing the colour palette and commands to access the more advanced menus.

To initiate any of these you simply move the cursor up to the chosen command by moving the pointer and press the Select button on the tablet. The Lift button allows you to move the control arm around the screen

without drawing. I found the control arm easy to manoeuvre and the position of the stylus is conveyed with surprising accuracy.

In a convenient corner of the screen a small box continuously shows an expanded area around the current cursor position (Zoom). A unique feature of all the Graphics Master commands is the buffered input from the digitiser. This means that if the software cannot keep up with the stylus it will catch up afterwards rather than losing part of the drawing — very clever.

Choose your colour

The standard sixteen colours are available from the main menu and the current colour chosen is also the border colour. But full colour mixing is also possible with Graphics Master. By choosing the Design option from the main menu, one user-defined and eight preset patterns are available for use with Fill and Draw, for example. By selecting two colours with the same "grey-level" on alternate horizontal lines an intermediate hue may be obtained with none of the problems of chroma distortion.

For example, mixing red and blue gives a wonderful deep purple not otherwise available. Similarly, one user-defined and eight preset brush styles can be used to paint either in solid colour or textures.

A further "Expert" menu gives elastic Lines, Rays, Boxes, Circles and ovals. As with KoalaPainter, an elastic box can be used to define an area of the screen to be copied elsewhere, and the background remains invisible. Another similar feature is the availability of two drawing screens and the ability to copy between them. Mirror functions allow various axes of symmetry to be defined giving kaleidoscopic effects. The Window command defines an area of the screen outside which drawing is inhibited.

The most remarkable thing about all these functions is that the majority can be used simultaneously. For instance, a large paintbrush can be used to draw in any pattern using elastic lines or circles with the Window and Mirror modes on. Most packages of this kind just do not allow such sophisticated stuff. All designs may be saved on to disk or cassette but there are no facilities available for using your pictures with your own programs or dumping to a printer. One wonders what one should do with them? The manual explains most of the features in adequate detail but I feel that more specific information should have gone into the section on colour mixing.

Conclusion

Superb software and good design makes this package excellent value for money. The lack of a printer dump is infuriating in an otherwise outstanding package but I would recommend this to anyone with an ounce of imagination and a few pounds to spare.

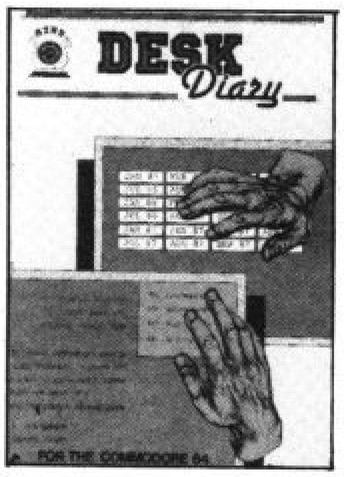
KoalaPad
Audiogenic Ltd
0734 664646
cartridge/disk/cassette software
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Touchmaster
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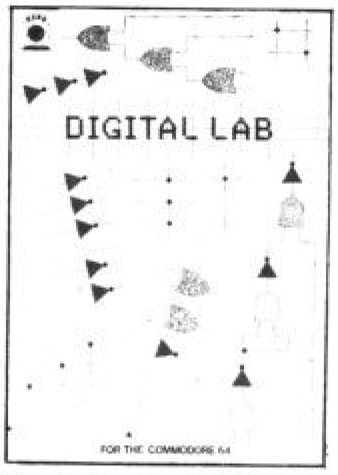
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CU3

C.16 SOFTWARE SUPPORT



by Mike Pattenden

When it was launched last summer as a replacement machine for the Vic 20, the Commodore 16 met with a mixed reception. Grumbles were heard about its limited memory, lack of sprites and poor sound capabilities. One of the main reservations was the lack of software support. Is it a dead duck? We asked software houses what they thought and compiled a list of what they had on offer.

Despite the apparent shortcomings of the Commodore 16 the machine has been selling well, even better perhaps than Commodore themselves had imagined it would. Sales they say, with customary reticence, have been "very substantial", and reportedly in six figures. Independent sources estimate the 16 user base slightly lower than this — approximately 90,000. However many have been sold one thing is pretty clear about this new computer — there aren't many games for it yet. If you are a C-16 owner you may be sitting there twiddling your thumbs and wondering whether you've bought a white elephant?

Well, rest assured, you haven't, though it may be a while before the market is as competitive and the quality is as good for the Vic and 64 as it is now. Though one or two C16s have been seen in the classified ad pages. Some people have clearly run out of patience with it already. One of the main reasons for this are the doubts the larger software houses are expressing in the machine. K-tel, US Gold, Activision and Virgin all have no plans to release any C-16 software at the moment. They feel there are more pressing priorities, the Atari 800 for example.



Psychedelia: Jeff Minter's dazzling light-show.

Expressing doubts

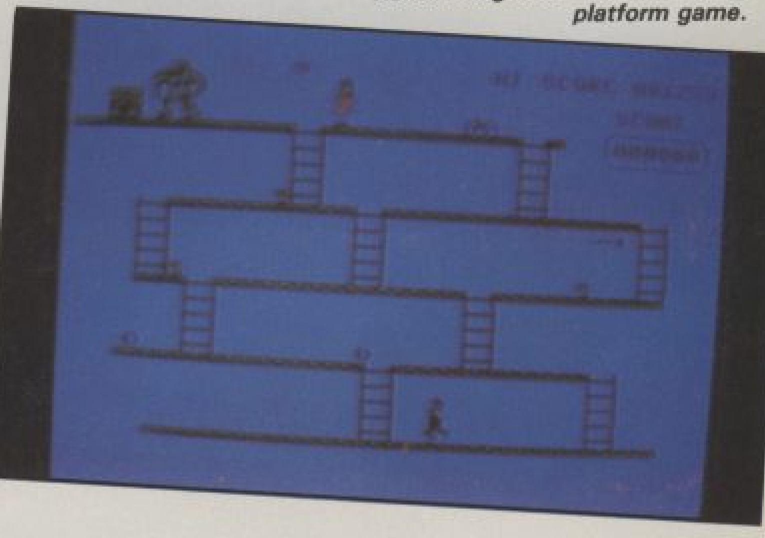
Gordon Reid, former software development manager and now production manager with Creative Sparks, voiced some of their doubts: "A 16K machine in this day and age is a shame, it could have proved much more competitive". Having said that, his company are covering themselves with a couple of converted Vic titles. This seems to be the case with many other companies who have personal doubts about the machine. Micropower, for example, consider the machine "badly thought out", but are considering putting some titles out all the same.

Alan Hobbs, sales and marketing manager with Microdeal: "people are having to set their reservations to one side. The sales have made them think again. Even if sales don't last, there are enough owners out there to warrant

Flight 737: Anirog's flight simulator has six levels of skill.



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attention." And it seems that the smaller software houses are in a better position to move rapidly — even if it's just to convert old 64 and Vic titles.

Melbourne House were one of the first major companies to put out anything for the Commodore 16 with their Book of Games and subsequently *Games Packs I and II*. Since then, according to Paula Byrne, their publicity manager, "we've been inundated with requests for more games.

"There's been an overwhelming demand from people who've bought the machine and found out there wasn't much to play on it." So all of a sudden smaller software houses are writing fast and furiously to fill the vacuum. Doubts or no doubts.

Short on adventure

There are bound to be some who consider that the Commodore 16 doesn't warrant the sheer effort of software development. Marketing considerations aside, some are put off by its limited memory. This applies particularly to adventures which require larger memories. Level 9 cannot convert its existing games and consequently has no plans for any new C-16 adventures. The same goes for Legend who consider the constraints of memory off-putting. Most adventures that are or will be available are of the text-only type.

The other main bugbear is the 16's lack of sprites. However, Solar Software consider that as a means of getting better character definition. Colin Courtney's programmers at Tynesoft were more than surprised at its capabilities. "The graphics are as good as the 64's, there's no sprites, but that can be compensated for." He's so impressed with it as a beginner's computer that he's dropped all his other stuff to concentrate on the 16.

Commodore backing

These opinions more or less echo Commodore's own about the machine. They know its limitations, but equally well they know it has a market. Rae Potter, software marketing manager at Commodore, is adamant. "There is a huge market for a starter machine and it will be supported, the ball has started rolling. It would be ludicrous for even the big software companies to miss out."

One indication to the market for C-16 software sales is that Craig Communications' *Flight 015* has sold over 10,000 copies since it was released just before Christmas. Whether the Commodore 16 will prove to be as successful as the Vic remains to be seen. It's doubtful that it will, it's more of a temporary measure. However, its price and the items included (1531 cassette unit, Introduction to Basic, Picture builder, XZAP, Punchy and Starter Chess) make it very attractive to the first-time buyer. In fact, since the 16K Spectrum was withdrawn, it is the cheapest machine on the market.

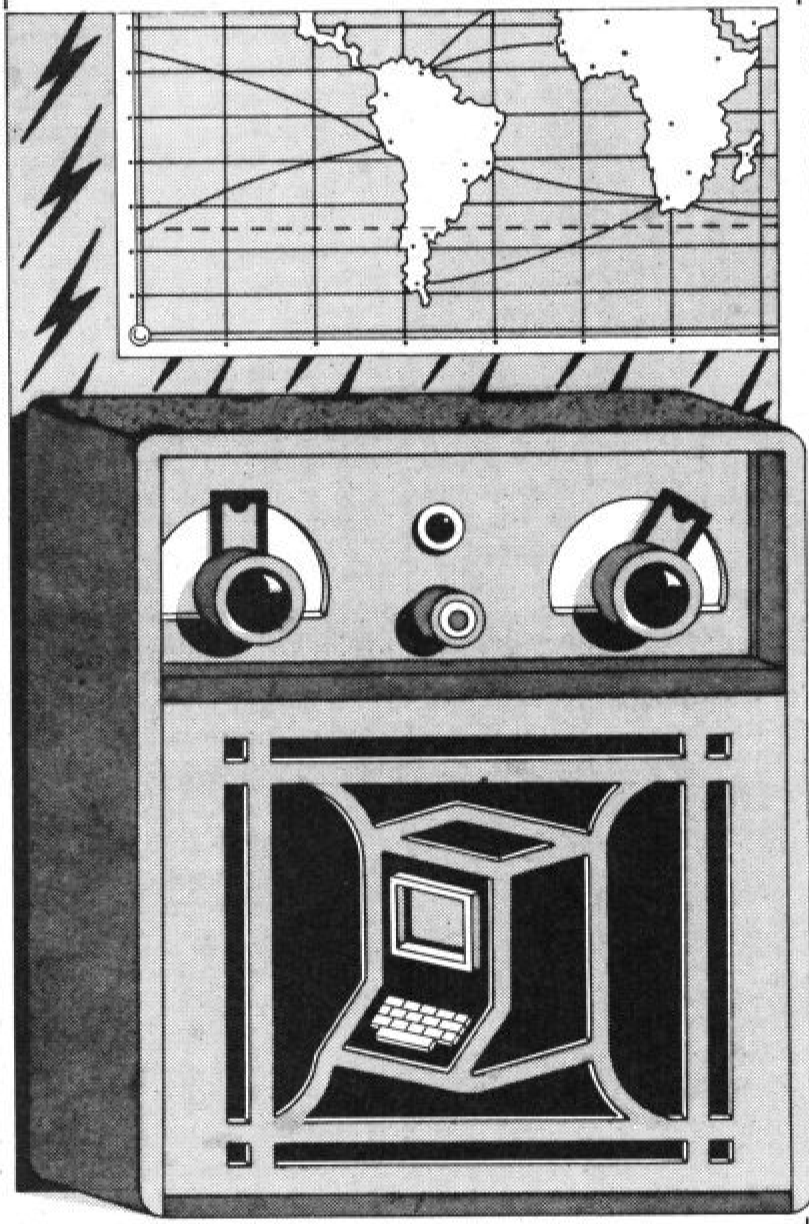
Software houses are beginning to realise that there is a boat and if they don't move fast enough they're going to miss it. Even those who doubt the C-16's viability are putting a conversion or two out to test the market. As for quality, it's only fair to say that at the moment it's not that high. Only a few new and original programs are available: like Anirog's 'Out on a Limb' which was written for the 64 but diverted to the 16, and Jeff Minter's Psychedelia (though even that's released simultaneously on the 64 and Spectrum).

Those companies which have chosen to ignore the C-16 may find that they'll have to change their minds. So, if you bought a 16 over Christmas, don't worry, help is at hand. Meanwhile, a list of what's currently available follows whilst Screen Scene this month tests a few of the new titles out.

COMPANY	TITLE	TYPE	PRICE	AVAILABLE
Commodore	Mayhem	Arcade	£5.99	•
	Harbour Attack	Arcade	£5.99	•
	Stellar War/Blitz	Arcade	£5.99	•
	Crazy Golf	Simulation	£5.99	•
	UXB	Arcade	£5.99	•
	Space Sweep	Arcade	£5.99	•
	Jack Attack	Adventure	£14.99	•
	Pirate Adventure	Adventure	£11.99	•
	Atomic Mission	Adventure	£11.99	•
	Strange Odyssey	Adventure	£11.99	•
	Fire Ant	Arcade	£5.99	•
	Purple Turtles	Arcade	£5.99	•
	Exorcist	Arcade	£5.99	•
	Locomotion	Arcade	£5.99	•
Anirog	Galaxy	Arcade	£6.95	•
	Space Commander	Arcade	£6.95	•
	Out on a Limb	Arcade	£6.95	•
Bubble Bus	Hustler	Simulation	£6.99	•
	Cave Fighter	Arcade	£6.99	•
Citisoft	Slippery Sid	Arcade	£6.95	•
Craig Communications	Flight 015	Simulation	£5.95	•
Creative Sparks	Tower of Evil	Arcade	£5.95	11th March
CRL	Berks	Arcade	N/A	•
Gremlin Graphics	Zargon Wars	Arcade	£6.95	•
Llamasoft	Psychedelia	Entertainment	£6.00	•
Mastertronic	Jackpot	Simulation	£1.99	•
Microdeal	Mansion Adventure	Adventure	£3.99	•
	Williamsburg Adventure	Adventure	£3.99	•
	Cuthbert in Space	Arcade	£6.95	•
	Cuthbert Enters the Tombs of Doom	Arcade	£6.95	•
Melbourne House	Games Pack I	Various	£5.95	•
	Games Pack II	Various	£5.95	•
	Roller Kong	Arcade	£5.95	•
	Classic Adventure	Adventure	£5.95	•
	The Wizard and the Princess	Adventure	£5.95	•
Ocean	Hunchback II	Arcade	£6.95	1st March
	Daley Thompson	Simulation	£6.95	1st March
	Kong Strikes Back	Arcade	£6.95	1st March
Quicksilva	Purple Turtles	Arcade	£5.99	•
	Tornado	Arcade	£5.99	•
	Skyhawk	Arcade	£5.99	•
Romik	Pottit	Simulation	£6.99	•
	Blaze	Arcade	£6.99	•
Solar Software	Galaxians	Arcade	£6.95	•
	Monkey Magic Quest	Arcade	£6.95	•
Supersoft	Kaktus	Arcade	£3.95	•
	The Chip Factory	Arcade	£3.95	•
Tynesoft	Shoot-it/Climb-it/Munch-it/Hoppit (4-pack)	Arcade	£14.95	•
	Rig Attack	Arcade	£6.95	•
	Olympiad	Arcade	£6.95	•
	Lunar Docking	Arcade	£6.95	•
	Excalibur	Arcade	£6.95	•
	Zapem	Arcade	£6.95	•

• = available now

MICRO-WAVE RADIO



Part 1 — introducing ham radio with the Vic and 64

We all know that you can connect your Vic or 64 to the outside world through a network like Micronet and Compunet. But how about amateur radio as an alternative? Radio hams have been connecting micros to their radios for some time to transmit and receive a variety of information. Jim Grubbs, radio ham and Commodore enthusiast, takes time out from his regular reports on Radio Sweden International, to write a four-part series. This month he introduces the subject, reveals plans for the series and gives a few contact addresses. **By Jim Grubbs**

No matter where you live, or what language you speak communication is a very important part of your life. Amateur radio operators have a unique opportunity to communicate with fellow amateurs world-wide. Since the days of Marconi, radio enthusiasts in Great Britain and the United States have shared a special cameraderie. It's hard to believe that it has only been in the last score of years that a historical satellite contact was established between our two countries, a modern day re-enactment of Marconi's original transatlantic feat.

Now, another revolution brings us closer together. The day of the micro has finally arrived, much to the pleasure and enthusiasm of radio operators all over the world.

Plans for the series

For the next four months, I'll escort you gently through the necessary programs to make good use of your Commodore computer in the ham shack and short wave listening post.

On tap is a morse code receiving program that will take you only minutes to type in and an accompanying hardware interface you can build yourself. The interface is a sort of radio modem that is necessary to match you computer to your radio equipment.

If that sounds like a formidable task, take heart, the circuitry is relatively simple. Though I wouldn't recommend the project to someone who has never breathed the aroma of hot solder, it should be manageable for DIY electronic types. You can always enlist the aid of a more seasoned operator.

To make a matching set, the following month we'll add a morse keyboard to the program that will take the drudgery out of sending. It can even be used for practicing morse code, so if you are just getting started, that may be the program for you!

Finally we will delve into the world of radio teletype transmissions. Using the same interface you built for morse reception, I will pass along an easy program for receiving teletype signals at all of the standard speeds.

Not everyone likes to build equipment from the ground up or even type programs. With that in mind, we hope to take a look at some commercially available products that work well with the Commodore computers.

The Commodore Vic-20 and Commodore 64 seem to have been designed with the experimenter in mind. No other machine in any price range makes the connections available for interfacing the computer to the ham shack like the Commodore machines. The problem seems to be in finding sources of information to explain how to make use of these connections. If I do my job correctly, this series will be one of those sources.

Ways to use your Vic and 64

What can you do with your Commodore micro in the ham shack, or the short wave listening post? There are several obvious answers and some more obscure ones as well.

Computers lend themselves to two tasks quite well. Number one is data crunching. Logging and other record keeping functions are just subroutine functions of database management that computers handle so well. The second is manipulation of coded data. After all, that is what your micro ultimately does with any program it runs, that is, manipulate coded data.

Morse Code, radio teletype, ASCII, and **TOR** or **AMTOR** (teletype over radio) are likely candidates for interpretation by your Vic or 64. In fact, next time, I'll put you on to a fairly simple Basic language program for receiving morse code and having it displayed on your monitor screen!

The possibilities do not end there however. A gentleman in Virginia has written a machine code program that allows your computer to be used to view slow scan television. Packet radio is becoming more popular with the availability of low cost com- ▶

Illustration: Roy Ingram

MICRO-WAVE RADIO

puters. Even a packet amateur radio satellite is in the works.

While I won't be covering these advanced subjects right away, they could be the subjects for future articles if you show an interest in them.

Looking at the equipment

In my ham shack, a Vic-20 lives full time. Right now I use only a datasette and a 1525 printer. I do have 16K of memory expansion with an eight slot mother board. With this equipment and several interfaces I use my Vic for all of the things already mentioned.

I use my Commodore 64 to write this column, along with a 1541 disk drive, another 1525 printer and a letter quality printer. I'm also somewhat fond of telecomputing, so several modems round out my "office" equipment. Yet another Vic does control operation around my house on a full time basis.

In the months ahead, the programs presented will be written so that even those among you with an unexpanded Vic will be able to make them work. Special attention will be given to the differences between the two machines. Occasionally a technique will only work on one machine or another, but I'll try and keep those to a minimum.

Please feel free to contact me with your questions. Perhaps the best way to do so would be to address your mail to **Commodore User**. Keep in mind the delay in answering mail from across the sea. If you do wish to contact me directly, you may do so at PO Box 3042, Springfield, Illinois 62707 USA. *Please* include an International Reply Coupon (buy them at post offices) or US postage if you wish a response. The postage bill is a bit steep even from my Stateside readers, so your understanding is appreciated.

Sources of Information

Rather than haphazardly trying to describe a useable program in the remainder of this month's space, let's take a look at some sources for inexpensive programs that you can use in the ham shack.

- The "**Public Domain**" people at 5025 South Rangeline Road, West Milton, Ohio 45383 USA have been supplying programs for Commodore computers for some years, first with the PET and now with the Vic and Commodore 64. Programs are sold as collections. Some of these disks or tapes have fifty or more programs on them! Each collection is priced at $10 US. I'm sure there will be an additional charge for overseas postage, so check with them first.
- Many of Mike Apsey's "**Journal/20**" amateur radio programs are included in the collections, including Mike and Rick Myers very popular **J-20 Morse**. Other programs are included for logging, duplicate contact checking, beam headings and so on. Not every program is a gem, some of them don't even run correctly, but for the money they are hard to beat.
- The **American Radio Relay League** offers through its "**Online**" column in QST, printed listings of several programs for Commodore machines. The only cost is for postage. Write to: American Radio Relay League, Department PX, 225 Main Street, Newington, Connecticut 06111 USA.
- Ed Cox, AA4BB, is a busy man. He is a medical doctor by profession, and when he's not busy with that, he edits and publishes **VicComm**. This is a truly great addition to the Commodore community, and particularly to the amateur operators. It is Ed's program that I mentioned for SSTV. You may contact him directly at Box 5491, Duke Station, Durham, North Carolina 27706 USA, for more information on his publication and programs.
- If you are in to tracking amateur satellites, or nearly any satellite for that matter, **AMSAT**, the **Amateur Radio Satellite Corporation** has an absolutely terrific program called AMS-2064 for $15 US. I used it to track Owen Carriott aboard the STS-9 shuttle mission with great success. Contact AMSAT at PO Box 27, Washington, D.C. 20044 USA.
- **The Association of North American Radio Clubs** has an extensive collection of programs designed for the short wave listener. A special collection (one each) for the Vic-20 and Commodore 64 are available. For more details contact: ANARC c/o Bill Krause, 6700 153rd Lane NW, Anoka, Minnesota 55303, USA.
- According to George Wood at **Radio Sweden International**, the European DX council held a workshop on computers and shortwave listening at their 1984 conference in Stockholm. They recommended forming a committee similar to the ANARC group. Jonathan Marks of **Radio Nederland** has volunteered to head the activity along with Per Eriksson of the Swedish DX Federation and George Wood. More information should be available from Jonathan. You may reach him at Radio Nederland Wereldomroep, PO Box 222, 1200 JG Hilversum, The Netherlands.
- Jonathan hosts a weekly show entitled "**Media Network**" over Radio Nederland. Experiments have been done using a "universal" language called BASICODE to broadcast computer programs over shortwave.
- I hope you will join host George Wood for "Sweden Calling DXers," heard on Radio Sweden International. Yours truly will be providing news and information on using computers in the radio post. Contact George for further information at: Radio Sweden International, S-105 10, Stockholm, Sweden.
- BASICODE experiments have also been run on **BBC Radio Four**'s "Chip Shop". Check your local listings as they say!

That should keep you busy for the next month posting some letters off to foreign shores. I'd be very happy to learn of any G land suppliers of amateur software for the Vic and C-64. I'll share that information in future months.

Next month, we'll make your Commodore understand Morse so that even Samuel F.B. would be proud. Until then, cheers from the radio post!

USER PROFILE



Bryan Hartley is a pretty keen amateur radio enthusiast with almost twenty years of 'listening in' and transmitting behind him. He's got both a Class B and A Amateur Radio Licence and now owns both a Vic-20 and a Commodore 64. Bryan's no exception; in his area of Poulton-le-Fylde in Lancashire, he reckons there are many more 'hams' using Commodore computers.

But what does he do with all these computers and radios? Primarily, Bryan tracks the numerous amateur radio satellites that whizz around up there in space. These help hams increase their range when transmitting and receiving from countries as far away as Russia and the States. Bryan used to track the daily satellite orbits on paper but found a program for the Vic which makes the job that much easier. It even calculates the elevation and direction in which his transmission must be pointed.

With its larger memory the Commodore 64 lets Bryan do much more; like his 'sunspot' program which tells him what the highest and lowest useable frequencies are for any particular country. He's also using it to track the new Oscar 10 satellite.

Of course, Bryan's got a pretty expensive radio, a Yaeso FT102 transeiver and does a lot more than work with morse code. But any beginner with a reasonably good radio with a short-waveband can receive morse code with the interface and Basic program we'll be telling you about next month.

Currah Speech 64

Speech Synthesizer

The Currah Speech 64 synthesizer and powerful amplifier uses the popular SP/0256-AL2 speech chip and has an almost infinite vocabulary. It has a text-to-speech interpreter for ease of speech output creation. Everything you wish to be spoken is entered in normal English, without special control codes or characters, it is therefore extremely easy to use. The voicing of the words is completely user transparent and the computer can carry on its normal running of a program while the speech chip is talking.

Speech Synthesis

The Commodore 64 speech synthesis utilises parts of the spoken word known as allophones. These are actual sounds that go to make up speech. The SP/0256-AL2 allophone speech synthesis technique provides the ability to synthesize an almost unlimited vocabulary. Fifty-nine discrete speech sounds (allophones) and five pauses are stored in the speech chip's internal ROM.



Text to Speech

Although there are only 26 letters in the alphabet, letters have a totally different sound when used in different words. For example, the 'a' in Hay is much longer and softer than in Hat. When you speak you automatically make adjustments because you know how a word should sound. Not quite so easy with a computer.

The 8K byte Read Only Memory contains all the instructions necessary for the SPEECH 64 to perform all of its more advanced functions including *Key Voicing * Text to speech conversion * Operating system. Having all the software on ROM means that Speech 64 is ready to use as soon as the computer is switched on. Unlike RAM, ROM is non-volatile, it retains the information inside even when the power is turned off.

The 500 gate 'Semi-custom' chip was developed in close co-operation with General Instrument Microelectronics and looks after all the hardware functions ensuring that the SPEECH 64 and your computer communicate properly.

Output via the T.V.

Analogue components together perform the functions of turning the speech output from the SP/0256-AL2 into audio level signals that can be fed into the C64 for output to the TV. They filter out the undesirable low and high frequency signals in the speech output and also amplify the signal to a suitable level.

New Basic Commands

There are 5 new Basic Commands which control all the functions of the interface. Making the Synthesizer very easy to use. You can even choose from a high or low voice and individual allophones can be 'intoned' to add character. Or use the synthesizer to create voice like sound affects.

```
10 SAY "HELLO"
```

The above is an example of the Syntax for entering speech into the computer and shows how simple it is to use.

The instruction book gives comprehensive details and examples of how to use the interface both from machine code and basic.

How to Order

The Currah Speech 64 costs only £29.95. You can obtain your synthesizer through any good computer store or by completing the order form and returning it to:

dk'tronics Limited, Shire Hill, Saffron Walden, Essex. OR by telephone quoting your Barclaycard or Access number. Orders normally despatched within 24 hours.

CURRAH

dk'tronics

Saffron Walden, Essex CB11 3AQ
Tel: (0799) 26350 10 lines

Please rush me

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I enclose cheque/PO/Cash for Total £.......................
or debit my Access/Barclaycard No.

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Signature...
Name..
Address...

ADVENTURE



You might have thought the tidal wave of new adventures had receded after Christmas — not a bit of it. Software houses like CBS/Ariolasoft and Eclipse/Longman have decided that the Brits are still drooling for more American imports — it's bound to mean lots of great titles for '85. Read on, for news, reviews, a chart and a competition.

REVIEW SECTION

Dracula bites back

It seems that ol' red eyes Count Dracula will never be allowed to enjoy his stake in peace, because now Melbourne House have injected some new blood into the fanged count with **Castle of Terror**, written by Grahame Willis and illustrated by Greg Holland, with music by Neil Brennan and additional programming by Peter Falconer.

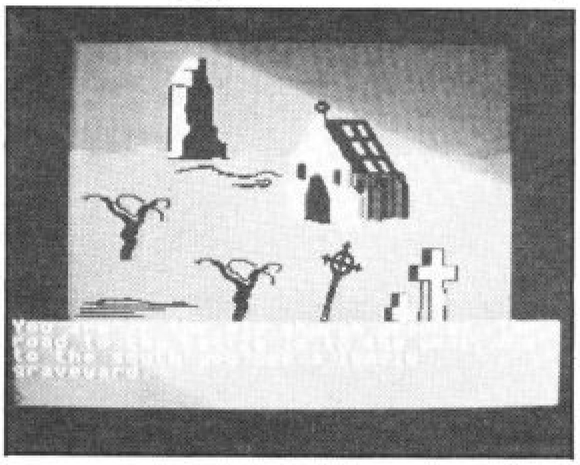
They all get credits because they all deserve them; Willis for devising a fresh and enticing variation on an old theme, and Holland for graphics which, in terms of their detail, colour, clever animated elements and speed, equal and frequently surpass the standard set in the classic *Twin Kingdom Valley*. Neil Brennan's music, too, isn't just tacked on as an afterthought but adds measurably to the atmosphere all the way through — and makes me extremely envious of what some programmers manage to coax out of SID's 532 POKEs.

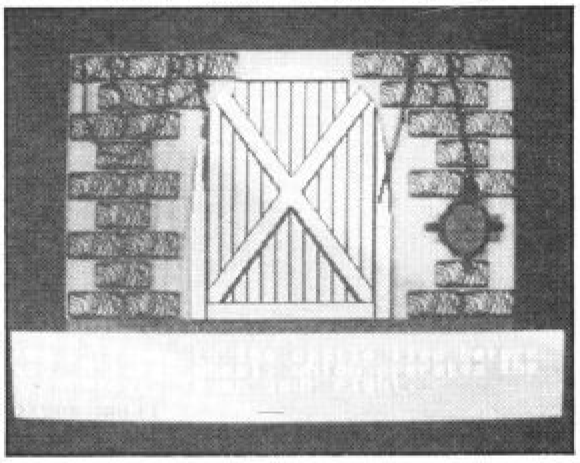
The game's ability to accept 'proper' sentences (such as "Get the axe and the knife and put them in the sack") as well as simpler verb/noun input means that the pleasure of playing it is available to youngsters and beginners as well as the experienced. And those graphics are almost worth putting on video. A transfusion will cost you just £9.95.

Adventuring with books

Usborne have followed by their useful and inexpensive beginner's guide to writing adventure programs (reviewed last month) with a couple more colourful and gloriously-illustrated titles at £1.99 which both present not only the full Basic listing for a text adventure but also pages of maps, locations and clues to which the player can refer while playing the game.

In *Island of Secrets*, you can pit your wits in real time against the wicked castle-dweller Omegan, the speaking stone, the sage of the lillies, and many other beastly and benign characters as you explore the petrified village, the well of weakness, the clone factory and many other intriguing locations. *Mystery of Silver Mountain* is a little less nightmarish but features plenty of goblins, wizards and trolls to keep the younger adventurer happy.





Castle of Terror "graphics are almost worth putting on video". This latest animated adventure from Melbourne House is our Into the Valley choice for the best 64 adventure of all time. Let us know what your favourite adventure is.

Apart from the entertainment you'll get from playing on your 64, 16 or Plus/4 (or Vic with 16K expansion), you'll probably learn some new programming techniques as you key the listings — though if you find that too laborious, Usborne offer each game on cassette at £5.99 (a little pricey, surely, but for the 64 and Vic only so far).

Adventure authors looking for inspiration should find plenty to interest them in **The Enchanted World** library from Time-Life. Titles in the series, price £9.95 each, include *Witches & Wizards, Legends of Valour, Dragons* and *Fabled Kingdoms*. Expensive, maybe, but they're very smartly produced and splendidly illustrated. Write to Time-Life at 153 New Bond Street, London W1E 8WE for a copy of their brochure on this series, which is available by mail only.

Snowball, The Hobbit, Valhalla and *The Quill* all feature in **Learning with Adventure Programs** by Rosetta McLeod (Melbourne House, 86pp, £6.95), which serves as a guide for teachers and parents of younger children, or slow learners, to the way in which adventure programs can be used to help improve communication skills. That's a worthy-enough role for adventures and the author, who is a principal teacher of English, gets my apple for helping others realise the potential which the splendid graphic and text adventures available today have in education.

Adventure the American way

No need to drool over inaccessible American adventures: the likes of Adventure International, Epyx and Avalon have now fixed themselves up with reputable UK distributors. **Ripper!** and **Telengard** from Avalon, marketed here by the Longman Group at £12.95 (disk only) and £7.95 (fastload cassette) respectively offer a tantalising glimpse of the quality of product from the US now at affordable prices.

Ripper! will definitely appeal to the purist, as it's a conventional text adventure centering on the reappearance in turn-of-the-century London of the man who brought spare-part surgery to

TURE NEWS ● ADVENTURE NEWS ● ADVENTURE

● **After flirting** with arcade adventure authorship for Commodore's *Spirit of The Stones* (which hasn't crept into anybody's chart at the time of writing), Ian Gray's *Empire of Karn* (Interceptor, £7 or £9 disk) has finally made it to the software racks. The second in a trilogy of graphic adventures, it won't disappoint admirers of Heroes of Karn or newcomers to the kingdom.

● **Steve Jackson**, the prolific author of Puffin's Fighting Fantasy DIY adventure books, is the imagination behind the new *Swordmaster* book/game adventure packages for the 64 from the omnipresent Adventure International.

● **Games Workshop** could have one of the text adventure hits of the year under their belt judging by favourable first impressions of *Tower of Despair* (£7.95). And having shrugged off the bad luck that's supposed to dog any association with Macbeth, Creative Sparks hope for a follow-up smash with a new graphic adventure, *Ice Palace*, featuring joystick-controlled commands.

● **Dungeon and Dragon**-type quest *Realm of Impossibility*, involving more than 120 locations, shares the spotlight with *Murder On The Zinderneuf*, an established Stateside hit, as the first two adventures from Ariolasoft, now marketing Broderbund and Electronic Arts titles in the UK. Prices are £9.95 and £11.95 (disk, £12.95 and £14.95) respectively for the debut duo. And the first Epyx titles to be imported by CBS include *Temple of Apshai* at £14.95, or £17.95 on disk.

● **After Booty's** much-deserved success, released on British Telecom's budget Firebird label (feted first on these pages), I predict a similar success for *Gogo the Ghost*, a high-spirited arcade adventure with 150 screens and almost a steal at £2.50.

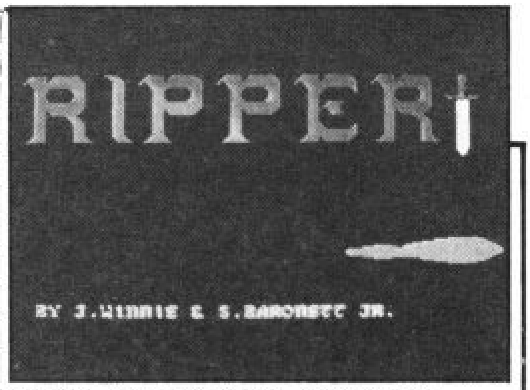
● **All Level 9** text and graphic adventures for the 64 now come on disk at £11.95 — or £2.50 plus exchange with your existing cassette copy. New catalogue's just out — send a large SAE to Level 9 at 229 Hughenden Road, High Wycombe, Bucks HP13 5PG.

● **Multi-User Dungeon**, the massive text adventure originally run on Essex University's DEC10, has switched to Commodore's Compunet. Charges are £5 per month membership of the closed user group, permitting up to 36 simultaneous participants, plus £3 per hour play fees and your phone charges.

● **New and pretty** faithful implementation by Pete Gerrard of *Colossal Cave*, the massive text adventure that really started it all, is out from Duckworth at £7.95. Latest catalogue features too John Ryan's *Mountain Palace Adventure* and *Castle Dracula* by Ray Davies, also at £7.95 each.

● **Deus Ex Machina**, the adventure-cum-strategy game from Automata which combines computer play with a synchronised soundtrack featuring the voices of Frankie Howerd, Ian Dury and Jon Pertwee, is now available for the 64 on tape or disk at £15.

● **US Gold**, whose hits for the 64 have included *Beach-Head* and the acclaimed graphic adventure *Dallas Quest*, are launching a new range of titles on the All-American Adventure label. More next month.



Ripper. Win this game. See below.

CHARTS

So many readers who've entered our competitions have written about their favourite Adventures that we've decided to compile our own Into the Valley Top Ten Adventures. But the novelty of it is that the chart will reflect your own opinions. Simply write down your three favourites on the coupon when you send off your competition form. If you're not into competitions, just send us your top three on a postcard. Oh, and if you feel strongly you've been ripped off with an Adventure, let us know about that, too.

Until your replies start rolling in, you'll have to make do with my own Top Ten. How does it compare with yours?

1. **Castle of Terror (Melbourne House)**
2. **Colossal Adventure (Level 9)**
3. **Zork III (Commodore/Infocom)**
4. **Eureka! (Domark)**
5. **Saga of Erik the Viking (Mosaic)**
6. **The Hobbit (Melbourne House)**
7. **Classic Adventure (Melbourne House)**
8. **Return to Eden (Level 9)**
9. **Spiderman (Adventure Int.)**
10. **Sherlock (Melbourne House)**

the masses. But don't think for a moment that conventional means dull.

Authors John Winnie and Stanley Baronett give you a week to explore the mysteries of Hampstead Manor, to which several famous personages have been invited to pool their brains — but hopefully not their blood — in the task of detecting the true identity of Jack the Ripper. The twist is, at least one of the invitations may have been intercepted by the Ripper himself.

My only quarrel with *Ripper!* is the appearance of the alphanumerics, which have been redesigned to give the text screens a period flavour; its novelty wears off (and deciphering it grows more testing) as time goes by. That apart, *Ripper!* is an important addition to that still very exclusive library of imaginatively and professionally-produced text adventures; I dare say it will be earning a place in our Top 10 very soon.

Telengard goes for gold

Telengard also gets a thumbs up for combining the elements of a role-playing and graphic adventure in one appealing game, much as Oracle's Cave did. The graphics aren't quite as sophisticated as the Dorcas hit, but the cast of characters, depth of attributes and play options make up for that.

Better still, you can achieve a game of Telengard in different ways; aim to achieve a certain level of advancement, develop your abilities for casting spells or charms, or just amass as much gold as you can in a given time. The fat little booklet that comes with the game packs in loads of different facts and hints about the monsters and other challenges you'll meet and the powers at your disposal.

This thoroughness, and the program's decent logic, probably makes it the only computer adventure that true Dungeons and Dragons freaks would be happy to be caught playing. And the virtually limitless variations on your progress and the outcome means that Telengard is a challenge that can never go stale.

COMPETITION

Since we've mentioned the new *Ripper!* game from Avalon, the nice 'n' simple question for this month's quiz is: in which area of London did Jack the Ripper commit his wicked deeds? Now go ahead and write your answer on the coupon below, not forgetting to include your three favourite adventures.

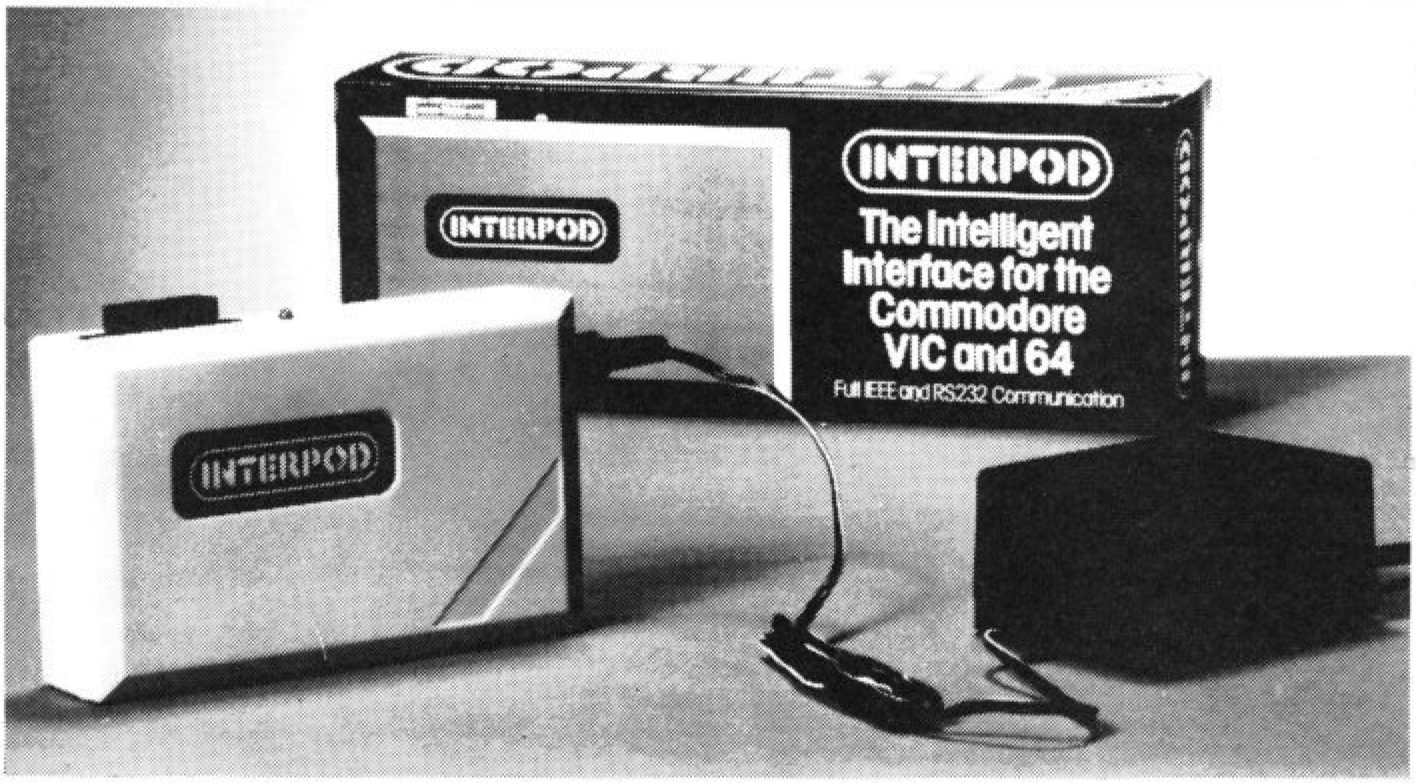
Name____________________
Address____________________

My three favourite adventures are:
1____________________
2____________________
3____________________

Send your entry to: Ripper Competition, Commodore User, 30-32 Farringdon Lane, London EC1R 3AU.

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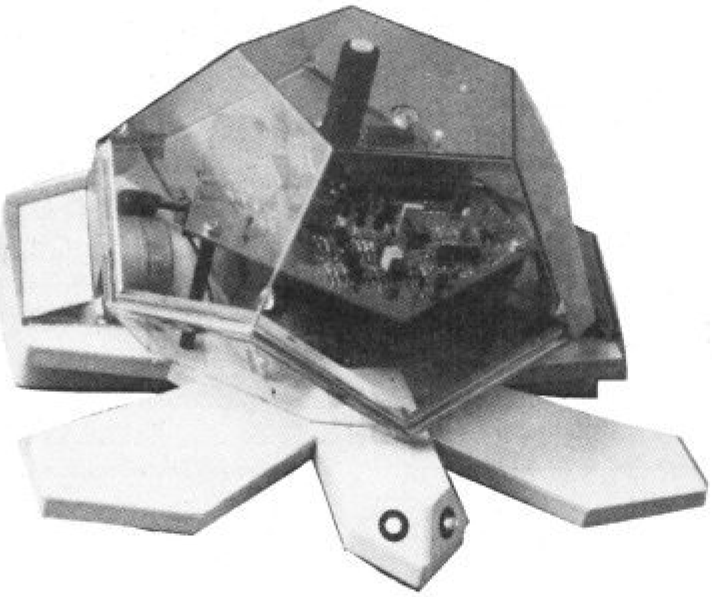
Turtles on the move

A look at Commodore LOGO and the Valiant Turtle

by Chris Durham

LOGO, that language of graphics and turtles, is often talked about but is rarely heard of outside schools, where its "turtle" facility is used as a fun and effective way of teaching young children geometry. Now, anyone with enough enthusiasm (and money) can buy both a mechanical Turtle and an implementation of LOGO to run it. Chris Durham introduces the language with a brief look at Commodore LOGO and puts the new infra-red controlled Valiant Turtle through its paces. For those of you who'd rather read about it, there's a book review, too.

Let's start by taking a brief look at the LOGO language. Commodore have a version of LOGO for the Commodore 64 on disk. It comes complete with a second disk containing utility programs and a comprehensive manual; all for £37.95. For anyone who wishes to delve into the language of graphics, turtles, procedures and list-processing it is a comprehensive package that will take you from the first fumbling steps right up to highly detailed text and graphical programs.



LOGO as a language

Some of you may well be asking: "Why another language? Haven't we got enough already with Basic, Forth, Pascal etc?". The simple answer is that no single language is ideal for every type of task; you only have to look as far as Commodore Basic to see that. LOGO for the 6502 range of processors was designed at the Massachusetts Institute of Technology (MIT) in 1981. Its main claim to fame was the small turtle (called a terrapin) which was used to draw items on the screen; this is often the only thing people know LOGO for.

The object was to help people relate the drawing with how it was made up. As such, it is very useful in schools where children learn all about triangles, squares and other shapes while driving a little "turtle" round a TV screen. To think that this is *all* LOGO is capable of doing, however, would be to deny the language its great flexibility, its structured format and its ability to cope with text in a very efficient manner indeed — but this article is not intended to delve into LOGO's more sophisticated features.

Procedures in LOGO

Many people decry Basic because it is not a "structured" language; at least, it wasn't before the advent of BBC Basic. In simple terms this means that you cannot define a section of code once only, name it and then use it just by putting the name in the program where you want the code actioned. Most other languages have the ability to define "procedures" and then call them for use later in the program. Anyone familiar with either Pascal or Forth will already be familiar with this.

In LOGO, you have a number of commands, called "primitives". These include the commands for moving the turtle, reading from disk etc. Procedures are built up by writing a block of code to do a specific task, using the available primitives, and then giving that block a name. This name is then available to be used as a valid language command in further blocks of code being called a "procedure".

Of course, if you had to build up the entire language from a few basic commands it would become very laborious, hence there are many machine specific primitives and procedures already available in Commodore LOGO. These allow full use of the sound, text and graphics facilities of the 64. Since procedures are a fundamental part of the language, examples will appear throughout the article, but I haven't got the space here to cover some of the more advanced uses for procedures.

The screen turtle

To be strictly accurate, the turtle is a small triangle, but who's going to quibble? The screen turtle acts in much the same way as the Valiant Turtle, of which more later. You give it commands to move either forward or back and to turn either right or left; you can also raise and lower the "pen" which allows it to trace its path. The commands are extremely straightforward, which is why it is so popular with children; they can have the turtle scurrying round the screen in no time at all.

For example, the sequence:
FD 20 RT 90 FD 20 RT 90 FD 20 RT 90 FD 20 RT 90
would draw a square. This can be further simplified to:
REPEAT 4 (FD 20 RT 90).
Circles, triangles and almost any shape can be built up from these basic directions. If required, whole sequences can be incorporated into a single procedure so that instead of even the simplified version above we could define a procedure for drawing a square as follows:
TO SQUARE
REPEAT 4 (FD 20RT 90)
Now, just typing **SQUARE** would draw our square for us.

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to graphics colours, LOGO can do it all with simple commands. **PC X**, where **X** is a number between 0 and 15, changes the pen colour while **BG X** changes the background (screen) colour. Because there are two screens being used simultaneously, one for text commands and the other for the graphics drawings, it is possible to alter the text screen colours independently from the graphics screen.

There are three main screen modes: Textscreen, where only the commands are visible; Fullscreen, which is the full graphics screen; and Splitscreen, where the bottom third of the screen shows the commands while the top part shows the graphics. You can switch from one to another easily using the function keys F1, F3 and F5 or under program control. If you want text on the graphics screen, then you use the turtle's pen using the command **STAMPCHAR**. There is a procedure on the Utilities disk which allows whole strings to be written, but you can write your own just as easily if you want the practice!

Disk Commands

Being a disk-based language LOGO has many disk facilities including all the common ones of saving and loading files and reading the directory. As well as saving files, you can also save and load individual procedures. This means that you can use the same procedures in a number of different programs without having to rewrite them. Additionally, you can save and load the graphics pictures that you have created, and by using another of the utilities provided, PRINTPICT, you can dump them out onto a Commodore printer although you have to exit from LOGO to be able to use it.

Now that we've taken a brief look at LOGO, it's time to turn our attention to a device that can turn LOGO commands into physical movement — the Turtle.

THE VALIANT TURTLE

In essence this is the screen turtle come to life. To add to the realism it even *looks* like a turtle, with its "shell", four legs and two eyes. It can do everything the screen turtle can (except disappear) including a pen which can be raised and lowered for drawing. The whole package costs £228 (£171 for schools) and consists of the turtle, communications device, power supply unit, floppy disk and the manuals (it also includes a screwdriver for adjusting the wheels and a felt tip pen for the pen-holder).

Animal magic

The Turtle is very well constructed, consisting of a plastic base unit with a green transparent shell covering the works. The turtle measures approximately 26cm by 26cm overall and stands about 14cm high. There are two stepper motors which drive the two wheels situated either side at the rear, the front "wheel" being a large steel ball which allows the front to turn in any direction, rather like a caster. There is another small motor inside which drives a cam to raise or lower the pen. This is a good method because the pen is not held down, but rests on the paper under its own weight; thus any undulations under the pen do not lift the turtle off the ground.

The turtle has two red LED "eyes"; these are designed to go out just before the batteries expire, giving some advance warning. Recharging is carried out by plugging in the mains-powered unit, which can happily be left on overnight. If you are in a hurry, you can recharge the batteries to 75% in only four hours.

The speed is not fantastic; it took about four minutes to draw a 12cm circle, although this was a severe test as it had to change direction every millimetre. A square of 12cms should take about 45 seconds. Because it is much bigger, it can be watched by a much larger number of people than is the case with the screen turtle. This makes it ideal for use in schools where the number of computers may be limited, but a large number of children want to see what it's doing.

Mobility and accuracy

The accuracy of the turtle is remarkably good. Because the motors are steppers it allows the turtle to be moved in discrete, finite steps, ensuring that the turtle moves in straight lines and turns exact angles. I gave the review turtle a complicated "obstacle" course covering nearly three metres, returning eventually to its start point. Even with abbreviated commands, the sequence took four lines of the screen, yet when the sequence was completed the pen was only 3mm from where it had started. On smaller drawings the offset was too small to measure.

On the mobility side there are drawbacks: the wheels do not protrude from the case very far, hence any slight bump and the turtle scrapes its bottom. This immediately causes it to go off course and loses all accuracy. In fact, the turtle is designed to be used on large sheets of paper (in order to do the drawing) and even then, any joins in the paper are immediately suspect; they must be extremely smooth otherwise either the pen or the wheels will foul it and bang goes the ▶



drawing. The manuals do tell you not to use it on any deep pile carpet for fear of picking up fluff in the motors. You need have no worries about this, the beast will not run at all on any kind of carpet, let alone a deep pile one.

The fact is that the turtle will only run on a dead flat, smooth surface. Since most homes are thoroughly carpeted, the only other solution seems to be the dining table, but that means lugging around the computer, disk drive, TV etc and setting it all up before you can use it; not very convenient if you normally use the computer in an upstairs bedroom. Besides, if the turtle needs the table, where do you put the computer?

Communications

The Valiant Turtle is one of the first "small" robotic toys to be operated by a "cordless" link; in this case infra-red. Thus there is no cable to get snarled up and if you want the turtle to turn round four times or go under a table so be it, there is nothing to stop you. The communicator is a slim grey box with a red transparent plate at one end. This box plugs into the User-port of the 64 via a ribbon cable and is powered by the same unit that charges the batteries on the turtle. The communicator has a surprisingly wide range and only needs to be pointed in the general direction of the turtle. The unit still managed to control the turtle when it was just inside the door of another room 10ft down a corridor (the unit being on a table in the middle of the first room). It finally lost contact 2ft inside the second room. A good point was that the turtle immediately stopped; it did not go trundling mindlessly on once it had lost the control signals. Even walking in front of the unit appeared to have no effect. The infra-red link is very definitely a far superior way of controlling such a device than any form of cable connection, even though this is presumably reflected in the price.

The software and manuals

The software comes on disk and you have to load and run Commodore LOGO first. This is because the commands for the turtle use the LOGO language as a shell and give you the procedures necessary to drive the communications module. Because some of the procedures are identical to some of the LOGO "primitives", the Valiant software has to change the relevant primitives so that there is no clash.

Full instructions on how to load and run the Valiant software are included on a separate, photocopied set of A4 pages, together with screen prompts as each stage is run. There is also a nine-page "User Guide", a comprehensive fault-finding guide at the back and instructions on how to adjust the beast if it draws less than perfect corners, for example.

Finally, there is a magazine, also with a glossy cover, called *Penup*. This gives various ideas for using the turtle, including games kids can play with it and includes examples of commands etc. Since all the commands are limited to the turtle moving aspects of LOGO, it is not necessary to have more than a rudimentary knowledge of Commodore LOGO in order to operate the turtle. As such the documentation is adequate; further progress being dependent on the children themselves.

Conclusions

The Valiant Turtle is a well designed, fun device which will keep children (and some adults) amused for hours. It can also, with appropriate tuition, help children learn a lot about geometry and drawing, although to be fair, a screen turtle could do this just as well. Whether there will be a large demand on the home market is questionable; not because there is anything wrong with the turtle, but because the room to use it will be limited and the cost will put it to the bottom of most parents' shopping list. This is a pity because I think the more children can "drive" computers to do things other than play games the better.

However, it is in the field of the classroom that I can see a major use for such a device. Provided teachers themselves are aware of what can be achieved using LOGO and the turtle, there has to be a future for it in schools. I hope so; it would be a sad loss if this little creature were to become extinct.

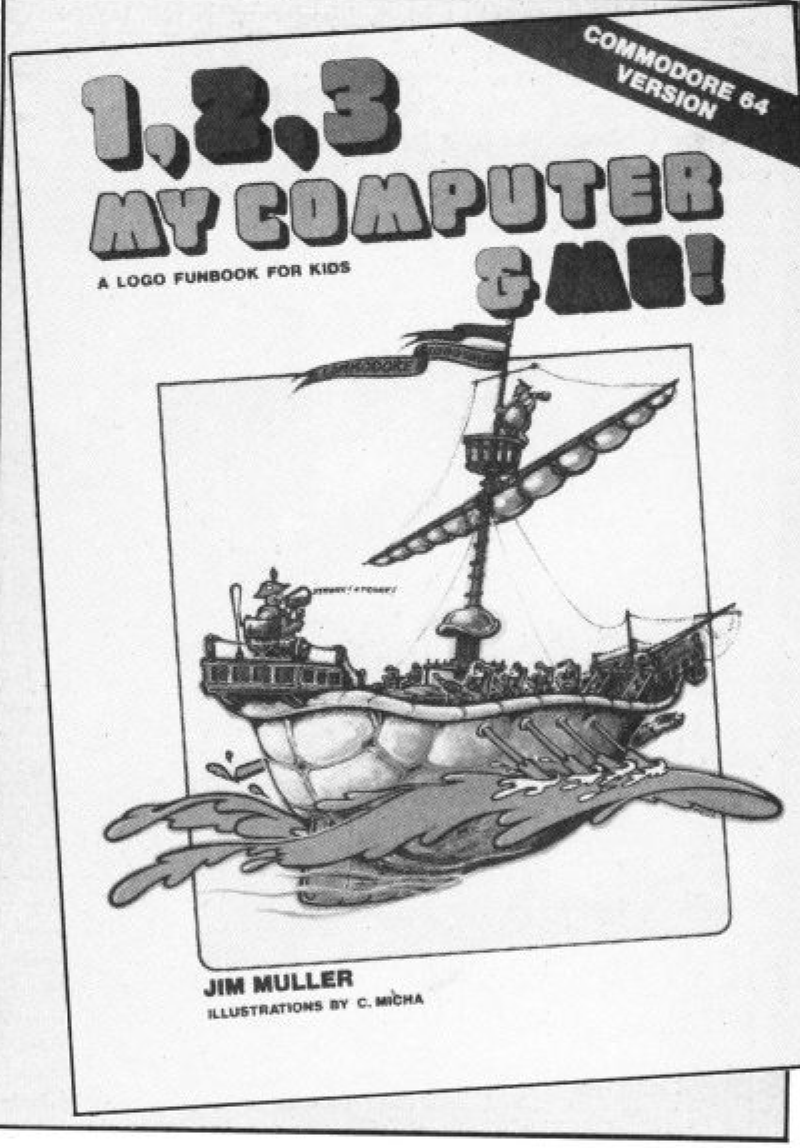
LOGO BOOK

Described as "a LOGO funbook for kids", this is a book to teach LOGO to children. Although it's American, there are very few of the jarring American phrases which often ruin otherwise good books of this sort, and as a result it is very readable. In fact, readable does not do this book justice; "doable" would be much nearer the mark, since this book sets out to teach LOGO in a very interactive manner — and succeeds admirably. Unlike many books which say "to draw a square you do the following . . .", this book makes the kids think about it first. It positively encourages them to write in it, making notes of what they did, what the results were and then what they had to do to get it right.

It is a very compulsive book too — I had to restrain myself from trying out all the ideas (just for fun). If it has any failings it is that it doesn't go beyond the turtle drawing stage (albeit very detailed drawings) thus perpetrating the myth that LOGO is only useful for driving a turtle round a screen. It also has some minor errors, but these do not really detract from the content. Parents who want to understand what their offspring do all evening could do a lot worse than borrow this book after said offspring have gone to bed. The real crunch comes in the price, which I find difficult to justify. It's a good book, excellent even, but £14 worth of excellence?

Kids will love this book, but I fear that a great many parents (and children) will be put off by the price.

- 1,2,3 My Computer & Me!
- by Jim Muller
- Prentice-Hall International
- £14.00
- Expensive excellence



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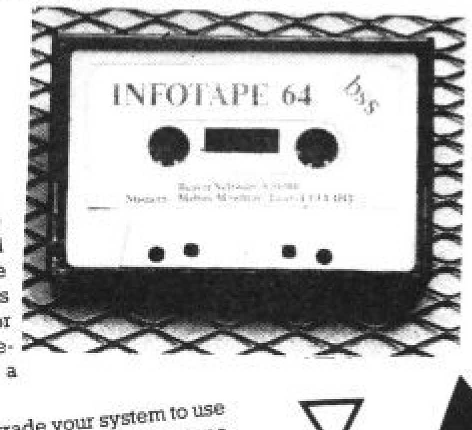
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(1) Raiders of the Lost Ark was directed by Stephen Spielberg, George Lucas, or Harrison Ford.
Answer..
(2) What is Indiana Jones searching for in Raiders of the Lost Ark?
Answer..
(3) Who created the character of Conan?
Answer..
(4) Screen Conan, Arnold Schwarzeneger, has won the Mr Universe title once, twice, or four times?
Answer..
The film I would most like to see converted to a computer game is ....

....

....

....

Name..

Address..

....

Please supply software on cassette/disk when available (please state which format you would prefer) ....
Sweatshirt size (please state small, medium, or large).......

Rules
Entries should be sent to Commodore User, Superheroes Competition, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU. They should reach the office no later than Tuesday 26th March 1985.

TASKSET COMPETITION RESULTS

At last, the results of our great Taskset Competition in last December's issue. Staff at Taskset assessed the huge amount of entries and eventually came up with the outright winner: Gregory Caldwell of Lindridge in Worcestershire. And here's his winning entry for you to key in, using our Easy Entry system:



```
10 POKE53280,0:POKE53281.0:PRINT"[RED][G<Y]
[G>E][G>D][G>C][G>F][G>R][G>@][G>R][G  >F]
[G>C][CYN]TASKSET[RED][G>C][G>F][G>R][G>@]
[G>R][G>F][G>C][G>D][G>E][G<Y]";:GOTO10
```

The ten lucky runners up to receive a stack of Taskset goodies are: Jason Dobbs of Dyfed, P. Pearson of Huddersfield, S. Salisbury of Acomb Yorkshire, Andrew Saxton of Leicester, Angus McDonald of Perth, A. Brown of St. Austell, Jonathan Hardy of Oldham, S. Sherlock of Merseyside, Alun Howells of Rugby and Jim Gardner of Burton-on-Trent.

Instead of ten aliens, C
for his Commodo

What happened ne



Saturday morning.

Waltzed into my local computer shop.

Packed as usual with masses of kids enjoying the arcade games.

Surely I could put my Commodore 64 to better use. Helpful assistant suggests a Commodore Communications Modem.

Tells me it comes with a year's free subscription to Compunet, a new network service, saving me a cool thirty quid.

A bargain not to be missed, so I bought a Modem.

If I knew then, what I know now, I'd have thanked that assistant more.



Saturday (one week later).

Fantastic.

My Compunet membership came through this morning.

Hurriedly plugged the Modem into my 64's cartridge port, and hooked up to the telephone line.

Can't wait.

At last I can communicate with other Commodore 64 Modem owners and giant mainframes.

What's more, I can also access databases throughout Europe and the U.S.A.*

This is what home computing's all about.



Sunday morning.

Raining.

Tapped in my Compunet I.D. and personal password.

Wow, what a directory!

Decide to pit my wits against other Modem users by entering Multi User Dungeon, an interactive on-line game.

Should stretch the old grey matter a bit.

Then a quick look in 'The Jungle.' This is an open area where other Modem owners display messages.

See a Commodore user in Fife wants to sell 'U-boat' for £3.00.

Leave message offering him 'Mighty Gork' on a straight swap.



Monday evening.

Move on to the Compunet Software Park.

What a choice. Loads of high quality bargain programs.

Particularly interested in educational software, so I call up 'The Study.'

Download free physics package to help with my exams.

Clive bought a Modem
dore 64.



ext changed his life.



Tuesday evening.

Dad's turn.
I don't get a look in as he's busy teleshopping.

Actually it's amazing what bargains turn up. He even finds a new house.

Mum said she doesn't want to move and anyway his dinner's getting cold.



Wednesday evening.

Discover I can join BLAISE,* the computer service for the British Library.

Their catalogue of books dates way back to 1950.

Should give me an interesting edge over my school chums.



Thursday evening.

Sis has a go.
She keys into Prestel.*
Imagine, over 300,000 pages of information and news.

What does she choose? The lonely hearts section.

She's disappointed. Couldn't find Simon le Bon's private number.



Friday evening.

Yippee! Receive a reply from the guy in Fife.

He fancies taking on Gork.

What's more he's written a program he'd like my opinion on.

He transfers it direct, using the free user to user software.

I've made my first computer pal.

It has really been a week.

Best one I've had since getting my Commodore 64.

Sure am glad I got the Modem instead of all those aliens.

The Commodore 64 Communications Modem comes as a complete package with a year's free subscription to Compunet, for just £99.99 inc. VAT.

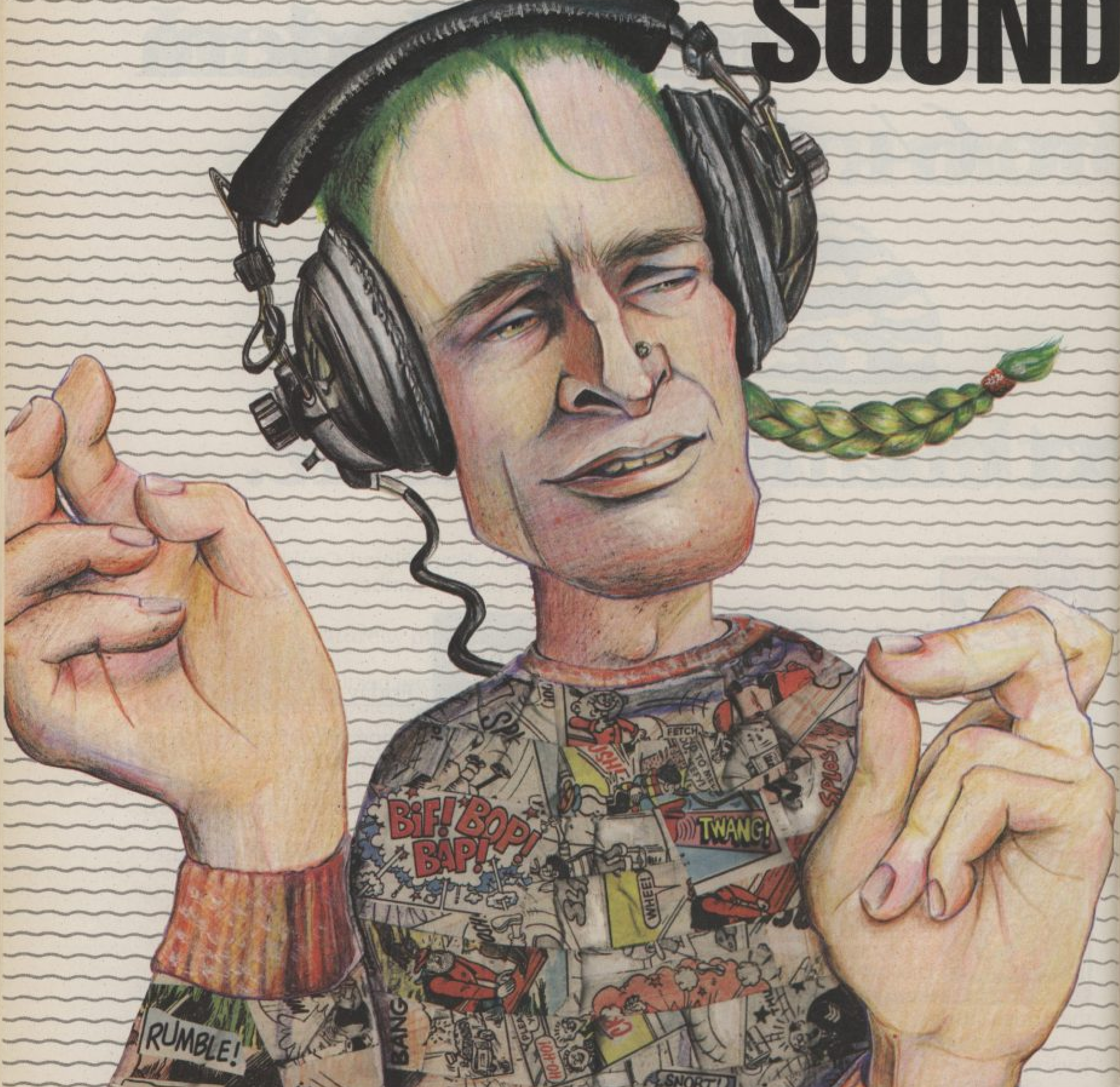
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SOUND


BIF! BOP! BAP!
TWANG!
WHEE!
RUMBLE!
BANG
CRASH
SNORT! BLINK BLINK BLINK
SLAP!
FIZZ!
EEK!
TWANG!
THUMP!
CLICK
WOOSH!

D EFFECTS WITH SID

Get to grips with hard synch and ring modulation

Ring modulation and hard synchronisation are two of the least used features of the SID chip — which is a shame because they'll let you produce really good sound effects. The concepts aren't difficult to learn either. They'll even let you produce four-note chords using only two of the 64's voices. So what are you waiting for?

by Tom Jeffries

First, it will help to know a little about sound itself. When you clap your hands together, the air that was between your palms is driven out and forms an area of compressed air. This area of compression travels outward in all directions, diminishing in strength as it goes. This is why sound gets softer as it travels farther — a hand clap that sounds quite loud at a distance of three inches can't be heard at ten miles.

Right behind the layer of compressed air there's an area of rarefied air — the extra air in the compressed area had to come from somewhere, so the area right next to the area of compression has a reduction in pressure. This area of rarefied air also travels outward in all directions, decreasing in strength as it goes. So far so good.

Your eardrum is designed to detect such variations in pressure. It is forced in slightly for the compressed air, and out again for the rarefied air. This movement is passed through various bones and fluids to nerves, which bring the information to your personal CPU (your brain) for deciphering. So, you can see why extremely loud noises can be dangerous — the eardrum, the bones, and the nerves have to be quite delicate to be sensitive to soft sounds; loud ones can cause damage.

Of course this description is somewhat simplified. Actually each different surface on your two hands sends out a slightly different "wave" of air. In addition, waves bounce off of the walls, floor, ceiling, and furniture and arrive at your eardrum a little later than the original waves. And that's how you get an echo.

Start making music

To get a musically useful sound, we generally want something a little longer than a handclap, and normally we want it to have a discernible "pitch". Both things can be accomplished by simply repeating the sequence of compressed and rarefied waves of air over and over again. The speed of the repetition determines what we hear as the pitch of the note.

Now, type in and listen to **Program 1**. At the beginning, the waves are slow enough that you can hear each one as a click; as they speed up you will be able to hear a low pitch which will get higher as the waves get faster. By the way, for a little insight into pulse waves, try changing **POKESID + 3,8** in line 30 to **POKESID + 3,2** and listen to the difference.

We measure the speed of the waves in cycles per second, each cycle being one compression and one rarefication. You may have heard musicians talking about "A-440". This term refers to the international agreement that we will call the pitch produced when 440 compression/rarefication cycles occur every second "A", and tune our instruments to that standard. Before this agreement was in existence, the music world suffered with a chaos of different standards similar to the one that plagues the computer world today.

The relationship between what our ear hears and the number of cycles per second is interesting. Whenever the number of cycles per second (called hertz) doubles, we hear the interval we call the octave. In other words, we would hear 220 cycles per second as an "A" one octave lower than the "A" at 440 cycles per second, and 880 cycles per second as an "A" one octave higher. The numbers you POKE into SID are calculated directly from the frequency of the note (number of cycles per second) by a rather straightforward formula which we can't go into here, but it can be found in Chapter 4 of the *Programmer's Reference Guide*.

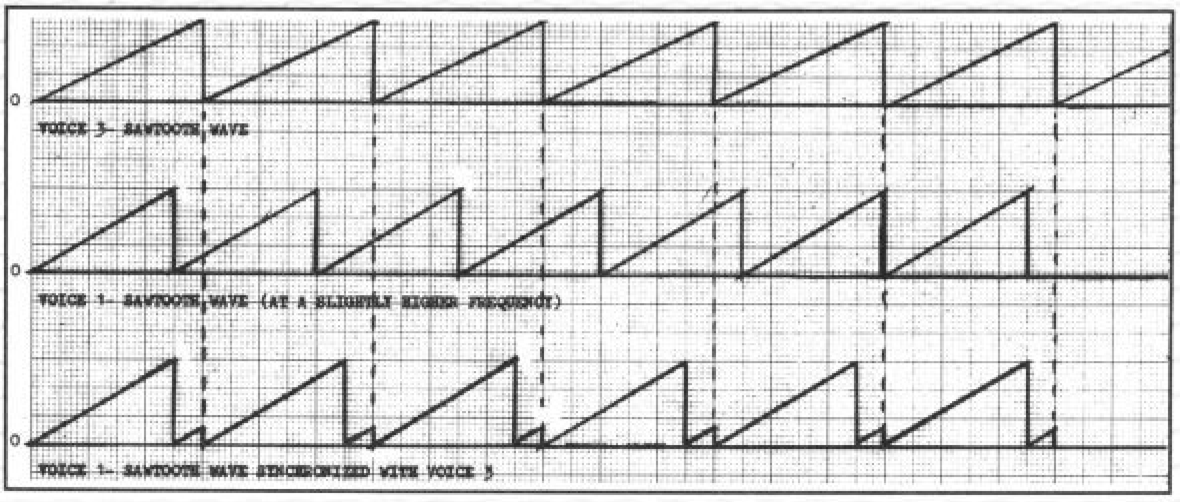
Ring modulation made easy

Now that you understand all that, ring modulation is easy to explain. Non-electronic sounds tend to be very complex (more about that in my next article), and electronic musicians have tried ways to generate similar complexity in synthetic sounds. Ring modulation, and hard sync, are results of that effort.

Ring modulation is really just a mathematical operation. Quite simply, you take two different notes, add their frequencies to produce one new note, then subtract their frequencies to produce another new note. The original notes are supposed to be eliminated, but you can still hear them. Sounds a little odd, doesn't it? Nonetheless, that's how it's done. An example will make it clearer.

Look at **Program 2**. Line 40 sets two pitches: "C" above middle "C" and "F" five half-steps up. The "C" has a frequency of 523 cycles per second and the "F" has a frequency of 699 cycles per second. 523 + 699 = 1222; 699 − 523 = 176. A pitch table will tell us that we should hear a low "F" and a high "Eb" at those two pitches. Program 2 compares the sound produced by ring

Figure 1: Compression/rarefication cycle in your loudspeaker.



SOUND EFFECTS WITH SID

modulating the original "C" and "F" to the sound of the resulting notes, low "F" and high "Eb", POKEd directly into the SID chip.

You will notice that the ring modulated sound is much richer; in fact if you listen closely you will hear all sorts of extra notes. Try POKEing **SID + 18,17** instead of 16 in Line 50 and you will hear *voice 3* also. As you can hear, it *is* possible to get more than three notes from the 64, and we aren't even using *voice 2*.

As you might guess, your Commodore 64 is not dealing with the actual waves in the air. As a matter of fact, all a computer can deal with is a series of numbers, so each wave appears to the SID chip as a series of numbers that go up and down in a regular pattern. A device called a "digital to analog converter" (DAC) converts these numbers into rising and falling voltages which go to an electromagnet that moves the cone of your speaker in and out, producing the compression/rarefication cycle that we hear and call sound.

Program 3 is a sort of sampler of ring modulated sounds. Try changing the timing loop in line 60 to **FORT = 1TO1000** so you can hear each set of notes. As you can tell, with some careful calculation you can get a four-note chord from two voices.

Hard Synchronisation

I had read several contradictory definitions of "hard synch", so I decided to see if I could get a definitive explanation. First I called Commodore's customer relations department in the US, which claimed that Commodore had invented hard synch so the information I wanted was proprietary. They were quite dismayed when I informed them that most professional synthesisers had some form of hard synch, including the one that sits right next to my Commodore 64 in my studio. So here's my definition.

Hard synch is very simple. It establishes a master/slave relationship between two voices, so that whenever the master voice starts a cycle, the slave voice has to start its cycle over again no matter where it is in its own cycle.

```
PROGRAM 1
10 REM:
20 SID=54272:FORL=SIDTOSID+24:POKEL,0:NEXT:POKESID+24,15
30 POKESID+3,8:POKESID+6,248:REM SQUARE WAVE WITH FULL SUSTAIN
40 POKESID+4,65:REM GATE VOICE 1 ON
50 FORA=0TO5:POKESID+1,A:REM HIGH BYTE LOOP
60 FORB=0TO255:POKESID,B:FORT=1TO5:NEXT:NEXT:REM LOW BYTE AND TIMING LOOPS
70 NEXT:POKESID+4,64:END
```

PROGRAM 1

```
PROGRAM 2
10 REM:
20 SID=54272:FORL=SIDTOSID+24:POKEL,0:NEXT:POKESID+24,15
30 POKESID+5,32:POKESID+6,248:POKESID+19,32:POKESID+20,248:REM SET ADSR
40 POKESID,135:POKESID+1,33:POKESID+14,193:POKESID+15,44:REM SET PITCHES
50 POKESID+4,21:POKESID+18,16:REM GATE VOICES 1 & 2 ON WITH RING MODULATION
60 FORT=1TO1000:NEXT:POKESID+4,20:POKESID+18,16:FORT=1TO500:NEXT
70 POKESID,72:POKESID+1,78:POKESID+14,58:POKESID+15,11
80 POKESID+4,17:POKESID+18,17:REM NOW WITHOUT RING MODULATION
90 FORT=1TO1000:NEXT:POKESID+4,16:POKESID+18,16:FORT=1TO500:NEXT
100 GOTO40
```

PROGRAM 2

```
PROGRAM 3
10 REM:
20 SID=54272:FORL=SIDTOSID+24:POKEL,0:NEXT:POKESID+24,15
30 POKESID+6,248:POKESID+20,248
40 POKESID+18,17:POKESID+4,21:FORA=32TO48STEP4:POKESID+15,A:
50 REM:FREQUENCY LOOP IN VOICE 3
60 FORB=0TO255:POKESID+1,B:FORT=1TO100:NEXT:NEXT:NEXT:REM LOOP V1 & TIMING LOOP
70 POKESID+4,20:POKESID+18,16:REM SHUT OFF
```

PROGRAM 3

```
PROGRAM 4
10 REM:
20 SID=54272:FORL=SIDTOSID+24:POKEL,0:NEXT:POKESID+24,15
30 POKESID+6,240:POKESID+20,240
40 POKESID,60:POKESID+14,50:REM SET FREQUENCY OF V1 A LITTLE HIGHER THAN V3
50 POKESID+18,33:FORT=1TO4000:NEXT:POKESID+18,32:FORT=1TO500:NEXT:REM VOICE 3
60 POKESID+4,33:FORT=1TO4000:NEXT:POKESID+4,32:FORT=1TO500:NEXT:REM VOICE 1
70 POKESID+18,33:POKESID+4,33:FORT=1TO4000:NEXT:REM VOICES 1 & 3
80 POKESID+18,32:POKESID+4,32:FORT=1TO500:NEXT
90 POKESID+18,33:POKESID+4,35:FORT=1TO5000:NEXT:REM V1 SYNCHED TO V3
100 POKESID+18,32:POKESID+4,34
```

PROGRAM 4

```
PROGRAM 5
10 REM:
20 SID=54272:FORL=SIDTOSID+24:POKEL,0:NEXT:POKESID+24,15
30 POKESID+6,248:POKESID+15,5:POKESID+1,5:REM SET VOICE 1 ADSR; VOICE 1 STARTS
40 REM: AT THE SAME PITCH AS VOICE 3
50 POKESID+4,35:FORV=10TO255:POKESID+1,V:REM START VOICE 1 WITH HARD SYNCH AND
60 REM: RAISE PITCH. NOTE THAT VOICE 3 IS NOT PRODUCING ANY SOUND.
70 FORT=1TO30:NEXT:NEXT:POKESID+4,34:REM:YOU CAN GET SOME GREAT SOUND EFFECTS
80 REM: USING HARD SYNCH
```

PROGRAM 5

Type in **Program 4** and look at **Figure 1** while you listen. You'll hear a lot of funny tapping sounds. So what's happening?

Making waves

Look at the top line of **Figure 1**. It shows how the voltage going to your loudspeaker rises to a high, and then drops to zero, producing the desired compression/rarefication cycle. The middle line shows *voice 1* going through the same cycle at a slightly faster rate, which will produce a higher pitch. The bottom line shows what happens to *voice 1* when it is in hard synchronisation with *voice 3*. It gets through one cycle and just gets started on another when it is forced to begin again with *voice 3*. **Program 4** plays *voice 3*, then *voice 1*, then *voices 3* and *1* without synch, and finally *voice 1* synched to *voice 3*, with the pitch set very low so that each voltage peak produces a click: hard synch in slow motion. **Program 5** shows some of the sounds you can get with hard synch. I have used sawtooth waves in these examples, but any wave will be affected by hard synch in the same way.

One additional note: with both ring modulation and hard synch, you have to look carefully to see what voice operates on what other voice, or you may not get what you expect. Appendix O of the *Programmer's Reference Guide* will tell you all you need to know.

Of course this is over-simplified; a complete discussion would take volumes. Just keep in mind that both ring modulation and hard synch are simply ways of making the sound output of your Commodore 64 more interesting and you won't go far wrong.

BOOKS

Assemble with Butterfield

Jim Butterfield has written many utility programs and magazine articles (some in *Commodore User*) and is recognised as probably the expert on Commodore computers.

Machine Language for the Commodore 64 and Other Commodore Computers starts by assuming that the reader knows nothing about the computer hardware and explains the concepts of a data bus, binary and hexadecimal arithmetic and looks at the registers in the 6502 chip. These are explained with clear diagrams and short sections of three or four paragraphs.

The next three chapters expand upon the initial encounter with machine code into the areas of I/O, status flags and arithmetic. Particular use is made of the 'kernal' subroutines in all Commodore computers to simplify programming tasks.

Chapter five explains the ins and outs of addressing modes. This is one of the best descriptions I have seen anywhere. Apart from explaining how the modes work he also gives the why, as in why the Indexed, Indirect is hardly ever used or why indirect jumps are so useful with ROM routines.

The book becomes progressively detailed, in particular the sections on linking Basic with machine code. This looks at where to locate the code, interacting with Basic variables and the potential hazards of mixed Basic and machine-code programs. Then you're led into the real dirt of stacks, interrupts, peripheral chips and system wedges. As usual these are very well explained.

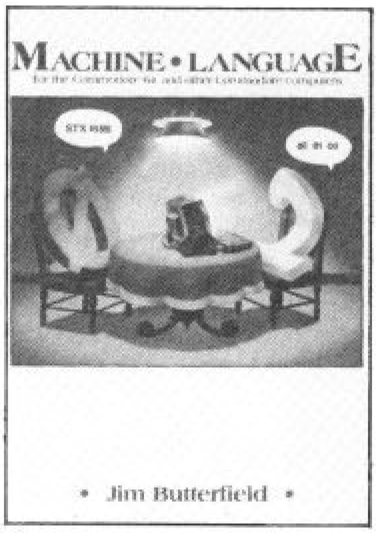
Finally, chapter eight discusses program timing, redirecting I/O and a summary of where you have got to. At this point we are not even half way into the book. Pages 147 to 326 are appendices A to J covering among other things machine code instruction listings, memory maps and ROM addresses, a listing of Supermon and reprints of technical data on I/O chips.

As you may gather I think that this is one of the best books on introducing machine code. It is a great shame that it fades out in the middle. The appendices appear to have been added as padding, useful though they are, and I feel that the book would have been considerably improved by the addition of a "real" program and description.

Verdict: extremely well written and a good introduction but somewhat lacking in content. It could equally have been titled "Machine Language for the Vic-20 and other Commodore computers".

David Bolton

- **Machine Language for the Commodore 64 and other Commodore Computers**
- **by Jim Butterfield**
- **Robert J. Brady Co. (A Prentice-Hall Publishing and Communications Company)**
- **£8.95**
- **well-written introduction**



Machine-code beginner

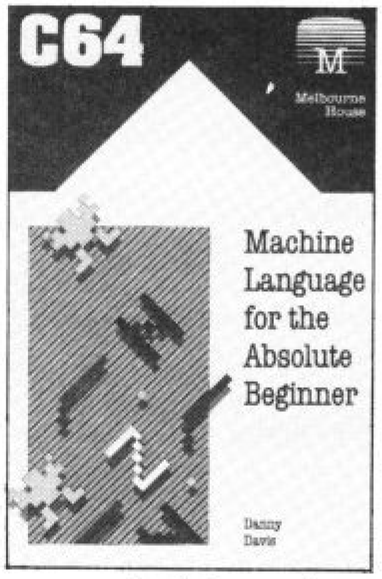
Machine Language for the Absolute Beginner is also aimed at beginners but differs greatly in presentation and content. It deals only with the Commodore 64. Mr Davis does not waste any time in getting to grips with machine language. A very short first chapter goes straight into subroutines and memory addressing. The next chapter looks at some of the addressing modes.

Chapter three slows the pace a little, it is concerned with teaching hexadecimal. This is in preparation for ALPA in the next chapter. ALPA is a Machine Language Monitor (MLM) written in Basic which lets you type in machine-language programs.

Using ALPA with lots of examples the book moves through simple arithmetic, control loops and index registers. All of the fundamentals of 6502 are covered up to interrupts which are mentioned but not dealt with. ALPA lets you type in lines a bit like Basic and all branches and JMPs are made to a line number of the desired instruction. ALPA works out the branch distance and this removes the cause of a large number of crashes in hand assembled code. The little example here shows the flavour of ALPA:

```
10 20L50 JSR L50
20 C9FA CMP £$FA
30 D0L10 BNE L10
40 60 RTS
50 EE00D0 INC $D000
60 AD00D0 LDA $D000
70 60 RTS
```

You type in the first bit, like 10 20L50, and ALPA displays JSR L50 to let you check your code. There are several commands to disassemble memory, move the program, load or save and run



programs. But it does require you to work out the hex value for each instruction but after working through the examples you should be able to make use of a proper MLM which will do this for you. The example programs are no longer than 30 lines and are for particular aspects of the 64 like moving sprites or clearing a screen.

After 100 pages the book goes into appendices and covers the 6510 instruction set, hex to decimal conversion, calculating branches and brief explanations of the registers in VIC, SID and CIA chips. Also given is a memory map and list of ROM routine entry points plus a listing of ALPA.

Verdict: Learning from this book would be harder than from Butterfield's but the examples are at least relevant to the 64. For a complete beginner or the owner of a VIC/PET/C16/+4 I would recommend the Butterfield book first. If you have a 64 then Davis is probably a better choice.

David Bolton

- **Machine Language for the Absolute Beginner**
- **by Danny Davis**
- **Melbourne House**
- **£6.95**
- **not for the complete beginner**

Vic goes West

Raeto West, famous for his book *Programming the PET*, has now produced what looks like an even better book for Vic users. This book is ideal for all users from beginner to advanced programmer. The programs can be typed in without getting eyestrain and an automatic proofreader is included as well, in one of the 17 appendices.

Apart from the usual stuff, the book includes aspects which have not been written about elsewhere: like how to use the random number generator, split-screen graphics, Basic extensions, and ROM cartridges to name just a few. The 17 chapters cover topics like Setting up, Basic, Tapes, Vic architecture, machine language, Vic & 64 comparison ROM listings, Graphics, Sound, Disk Drive, Games Port, Peripherals, Colour and much more, whilst the 17 appendices include numerous listings like Opcodes, VIC Chip Registers, Screen Locations, ASCII and much much more.

Graphics (chapter 12) illustrates the depth of approach: memory-map configurations are explained clearly, so you can select where to put Basic, where to put screen memory and where the machine language or user-defined graphics should go. Condensed lettering; the maximum possible screen; block saving and reloading data, are just a few topics written about. Nor is the beginner ignored as there are short Basic, easily-understood demonstration programs to whet the appetite.

I found the tape and disk sections most beneficial as not only were programs including machine language covered but also their storage on both media.

At £10.95 for over 600 pages packed with virtually all the information you are likely to need, this book must be a bargain. If you only buy one book for the Vic then this must be it!

Jennifer Goldsmith

- **Programming the Vic**
- **by Raeto Collin West**
- **Level Ltd (Computer Publications) PO Box 438, London NW3**
- **£10.95**
- **recommended**



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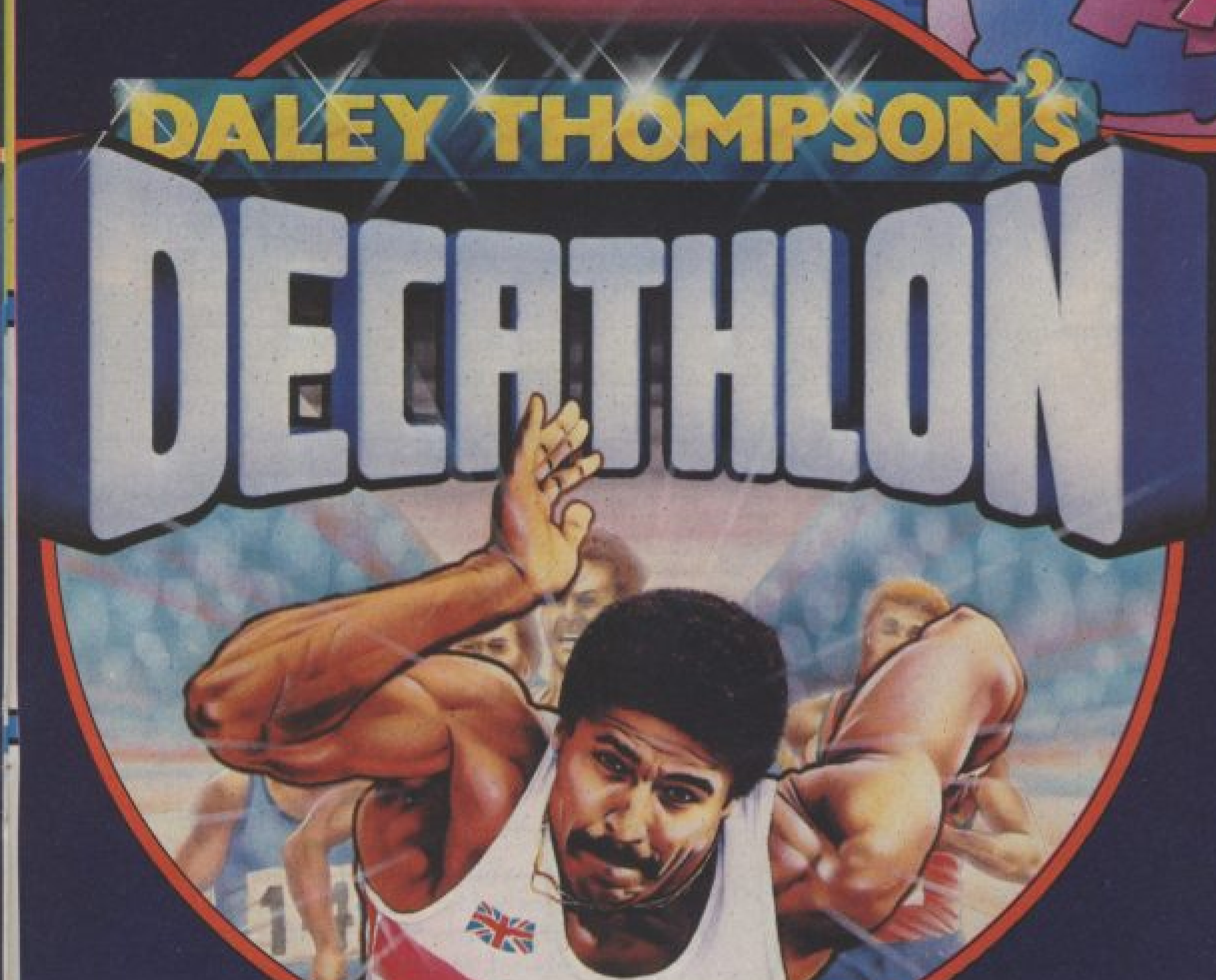
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What's on Micronet and Compunet

by Robert Schifreen

Whenever something big happens in computing, all the magazines pick up on it and write their own versions of the story. Such was the case, recently, over a couple of incidents regarding security at Prestel.

When a hacker penetrated Prince Philip's personal mailbox even the national press decided that this area of computing was interesting.

At a time when Prestel was still blushing from this embarassing invasion of privacy, Timefame, one of the most widely-read information providers on Prestel, claimed it had been hacked again. Just a day after the first mega-hack.

MOLE MESSENGER

When hacking hit the headlines, Prestel published an announcement on its pages. As part of a routine security tightening, all information providers were to have their 10-digit IDs changed the following weekend. In fact, because of various blunders, the change was delayed.

However, when Timefame received its new ID numbers, the staff rang round all the Prestel computers to change their 4-character password. And when they dialled one particular computer, it said "Good Evening Timefame, you last used this computer at . . ." and the date printed was that very afternoon. Some nasty hacker had discovered their new ID before even Timefame themselves!

What got the top people at Prestel annoyed was Timefame's reaction. The company wrote an article, saying that this incident surely indicated that there was a mole among Prestel's staff.

The story was closed to general user access and put in an area accessible only to Timefame and Prestel staff. Timefame gave Prestel two hours to reply, after which the story would be made public. Prestel didn't, so Timefame published. End of round 1.

DOWN THE PLUGHOLE

Round 2 started by Prestel sending Timefame a mailbox message by return. (For a change, the mailbox computer was actually working). Timefame had two hours to withdraw their statement, after which Prestel would terminate its contract with Timefame.

Everyone knows what happened next. Like others, I tried to access Timefame's pages that evening, only to find that they weren't there.

Prestel had pulled the plug. Prestel claimed that the hacker had used Timefame's old ID number, and had used their account just minutes before the ID was changed.

Timefame obviously didn't believe this, and Prestel declined to show them the proof that they said they had. Actually, Prestel was right. I know for a fact that Timefame's new ID was not hacked, and that there is no mole within Prestel. (Now can I have my cheque please?!)

Maybe the reason that Prestel refused to display the evidence was that people might have been surprised at how detailed it was. If you try to log on to the system and supply an incorrect password, you are disconnected. Details of who you were trying to log on as, and when, are recorded and sent to the mailbox of Prestel's security manager — automatically. If an information provider gets his editing password wrong, the same thing happens.

Oh, and you've probably read Prestel's various statements saying that they have no way of monitoring calls. Humbug, as they say. Prestel software can monitor either specific customers, or groups of customers who are members of any social group as specified on the application form. Like all those living in a certain area. Or all those whose bill increases by a large amount from one quarter to the next.

Compunet still has its problems. Speed is important when you're linking computers through the phone network, as time is money. I've been asking around via the Micronet Chatline for comparisons between the Prestel service and Compunet. Commodore's system is much newer, which is both good and bad. It's good, because subjects like security have been discussed more. The main problem I've heard of with Compunet is speed and availability. Sometimes, you dial up and the service is unavailable.



DAILY MAIL

One of Micronet's newer inventions is Chatline. You type in a message and a BBC micro automatically publishes your message for all to see within a few minutes. Recently, though, Prestel mailbox has been having problems. Complaints from customers, including myself, have flooded in to Prestel. Micronet even went to the point of publicly slagging off Prestel and telling them to pull up their proverbial socks. Surprisingly, though, Micronetters didn't back up the statement.

Instead, the Net received reminders from many of its subscribers warning them that a similar fate to that which befell Timefame could soon be applied to Micronet if they start to publicly discredit Prestel, though I doubt whether this would happen.

Electronic mail is gaining in popularity all the time. The Courier service on Compunet is set to become popular, though it is quite expensive to use. Prestel mailbox is free, though frequently unavailable over the last month or two. The next few months should see the arrival of customised mailbox frames on Prestel. You design your own frame and Prestel turn it into a mailbox frame for you. Then, you can send your friends a personal message. Just like electronic headed notepaper.

TANDATA NEWS

Tandata have launched a new communications package for the 64. Supplied on disk for £34 + VAT, it enables you to spool incoming data direct to a disk file or the printer. It's compatible with various word-processors, so that you can send a word-processed file down the line to an electronic mail system like Gold. More details from Tandata via Prestel page 799 or Gold 81: TAN010. Now there's technology for you.

Finally, Micronet seem just as slow in updating their Commodore areas as they do for the rest of their database. In the last few months, subscribers have been treated to half a dozen hardware reviews and a handful of average feature articles. I'll be back next month, little yellow vans permitting.

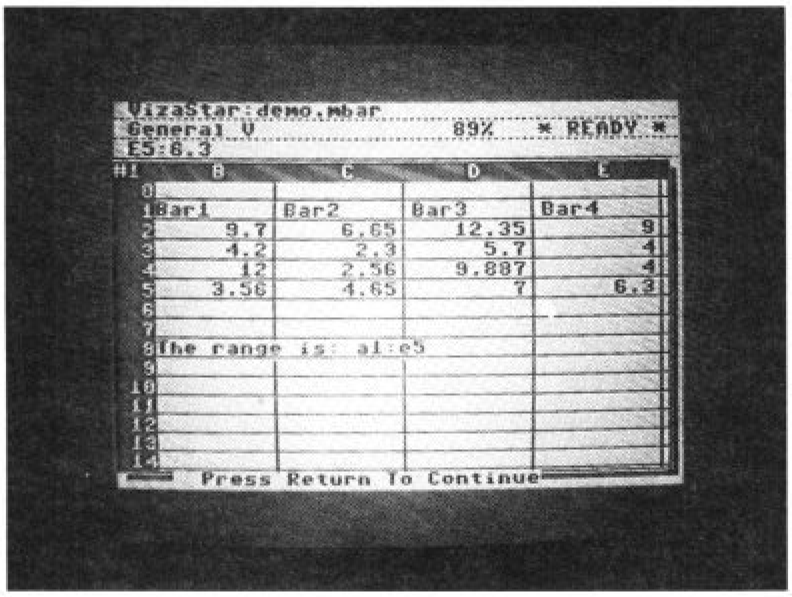
STAR TURN

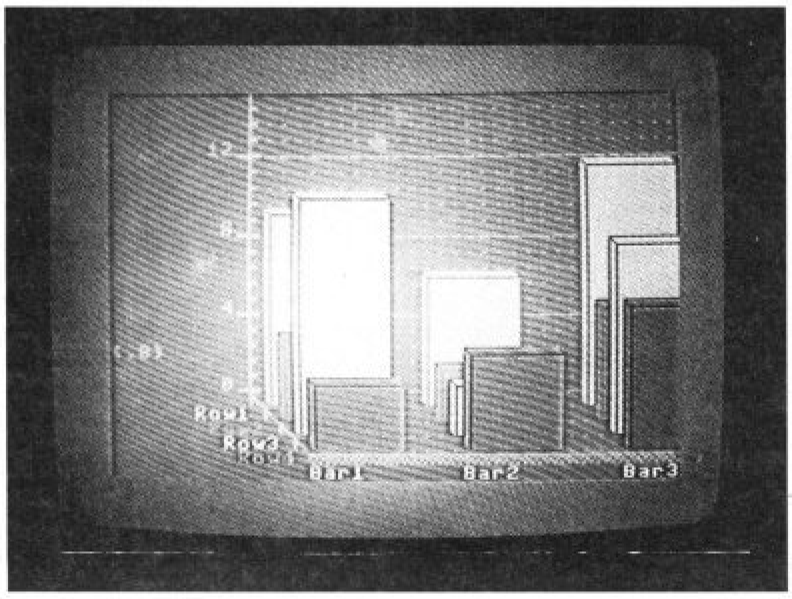
Vizastar, from Viza Software, is one of the new breed of integrating business packages that combines spreadsheet, database and graphics facilities. Clearly inspired by the massively successful Lotus 1-2-3 and its successor, Symphony, it proves that the Commodore 64 does have considerable business power — and that you can acquire powerful business software for just over £100. Karl Dallas gives an overview of the package's facilities and looks at a real time application for it in the transport industry. **By Karl Dallas.**

Vizastar is a programmable spreadsheet and database, one of a new breed of spreadsheets-plus whose inspiration is clearly taken from Lotus 1-2-3 and its successor, Symphony. But while 1-2-3 was written for the powerful IBM PC and its clones, requiring 296K of memory to run (and Symphony requires at least 320K) this new mini-Symphony compresses similar power into the 30K or so available to the user of the Commodore 64.

Of course, it can't offer the entire integrated package of spreadsheet, plus database, word-processor, graphics, and programmability. Trying to cram all four into the pint pot of available memory would have invited the sort of compromises that made the Three-Plus-One ROM-based software of the Plus-4 such a disappointment. But it does add 4K extra memory in the cartridge that accompanies the disk (8K in the larger, XL8 version) and produces graphics as well as spreadsheet and database.

Vizastar gives an impressive demonstration of its ability to generate colour graphics from data input to the worksheet. The example below shows a three-dimensional bar graph representing the data above. Line graphs can also be drawn.





Cells, records and fields

The spreadsheet is of more than reasonable size — a maximum of 63,936 cells, 64 across and 999 down — and the database is a proper application, too, supporting up to 1,200 records on a 1541 drive. The number of records in a file is limited only by disk size (about 1,200 names and addresses on the 1541, about 8,000 on 8250), with up to 64 fields/9,000 characters per record, spread across nine screens. Average access time per record is claimed to be less than three seconds.

It actually uses a section of the notional sheet (rows 1000-plus), not otherwise available to the user, to store

TRUCKING WIT

Despite all evidence to the contrary, the business power of the Commodore 64 is still undervalued. After all, it can't possibly compete with the irresistible force of the 16-bit IBM compatibles, and powerful spreadsheets-plus like Lotus 1-2-3. Or can it?

Well, meet Terry Palmer, a man who has tried 1-2-3 and found it wanting . . . and prefers to recommend to his clients a 64 plus Vizastar, to achieve a better result at a rather lower price.

Terry Palmer is a transport consultant, and he says that most of the truck fleets in this country consist of around five vehicles. But most of the computer packages available for them are designed with the larger user in mind and cost over £1000, because they are aimed at fleets of 1000 vehicles or more.

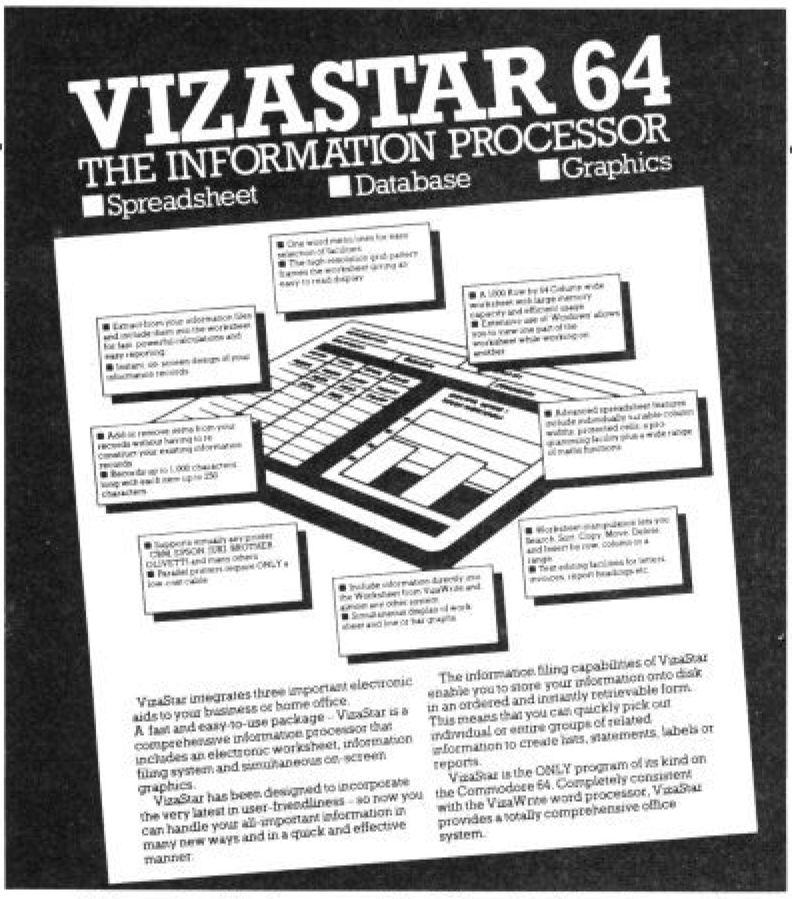
Not surprisingly, few small fleet owners have got into computers so far, as Terry Palmer found when he conducted a survey sponsored by the Science and Engineering Research Council, so he set about devising a system that would make more commercial sense.

A cheaper alternative

Although he started developing it using Lotus 1-2-3, he ended up fitting it into the memory of the Commodore 64, using Vizastar, a programmable spreadsheet-cum-database program costing less than £100, compared with over £2000 for a complete fleet management and vehicle costing package, not including the hardware. In total, he estimates a software-plus-hardware cost of £1000, about a fifth of the total cost of the larger systems.

This is part of a project he is conducting in association with the Polytechnic of Central London to see if small truckers would find the information provided by such a system useful, and if they would be prepared to invest in it.

He started with the familiar log sheet that all truckers know, and produced report forms on which the truckers record all the jobs done, their journeys, destinations,



record formats. Each record can be accessed by Key or Next, Prior, First, Last or Current commands (each utilising the initial letter from a command menu). Records may also be Added, Replaced (modified), or Deleted.

The fields have letter names, starting with A and finishing with BK, which relate the columns of that name in the spreadsheet, so, for instance, search criteria can be set up on a blank line of the spreadsheet. A is always the key field.

Writing with Vizastar

Although it does not contain a word processor as such, a blank worksheet could be used as a kind of document, since if more text is typed into a cell than properly can be displayed, then the surplus text will be displayed in any adjacent vacant cells.

With not too much difficulty, it would be possible to use this facility as a mini-WP. No string search or block move commands exist (though ranges of cells could be moved), but since Vizastar worksheets can be exported as sequential files and read by Vizawrite, any real formatting could be done under the "proper" WP program. Likewise, Vizastar can also handle WP files generated by Vizawrite, or completely unrelated programs, like the Easy Script word processor.

Since versions of Vizastar and Vizawrite are shortly to be made available for the 8296 (64 versions are already available in the 8050/8250 disk format), it would be nice if a totally integrated VizaStar/Write could be produced not unlike the Superoffice Superbase/Superscript combination from Precision.

Programming Vizastar

The other way in which VizaStar scores over all its competitors is the simplicity of its programming. This is not limited by any memory con-

WITH VIZASTAR

mileage, fuel costs, cash expenses and operational costs.

At the end of each week, the data from the sheets is transferred into the spreadsheet, which is programmable to make entry of data semi-automatic, moving the cursor to the next entry point, and so on.

At the end of data entry, the sheet has already calculated whether a profit or loss has been sustained, and produces a complete analysis of the week's business. The weeks can be consolidated in monthly analyses, and the months into an annual return.

Since Vizastar also treats a part of the sheet as a database, saving records and retrieving them from disk in exactly the same way as pure database programs, using a key field, or allowing browsing through the list by the use of 'next', 'prior' or 'current', 'first' or 'last' commands, a permanent customer record can be maintained. The sheet can also be used for quotations.

Compromises

Terry Palmer has had to make very few compromises to fit the program into the 64's memory.

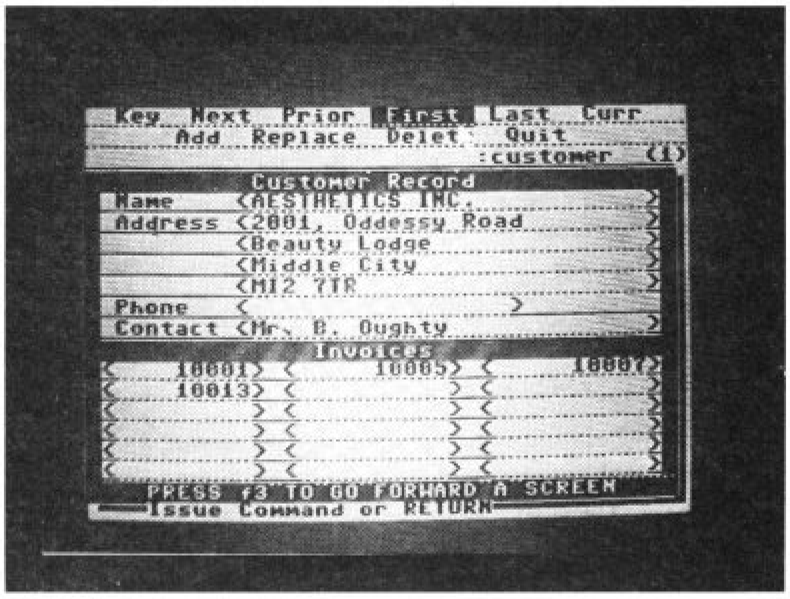
"Actually, when I compare it with 1-2-3, I find the ability to program the sheet much easier with Vizastar," he says. "Of course, it is limited to the smaller operator: ten vehicles is the upper limit. But if I put all the data for one vehicle on a different disk, that allows me to cover an entire year on that one disk.

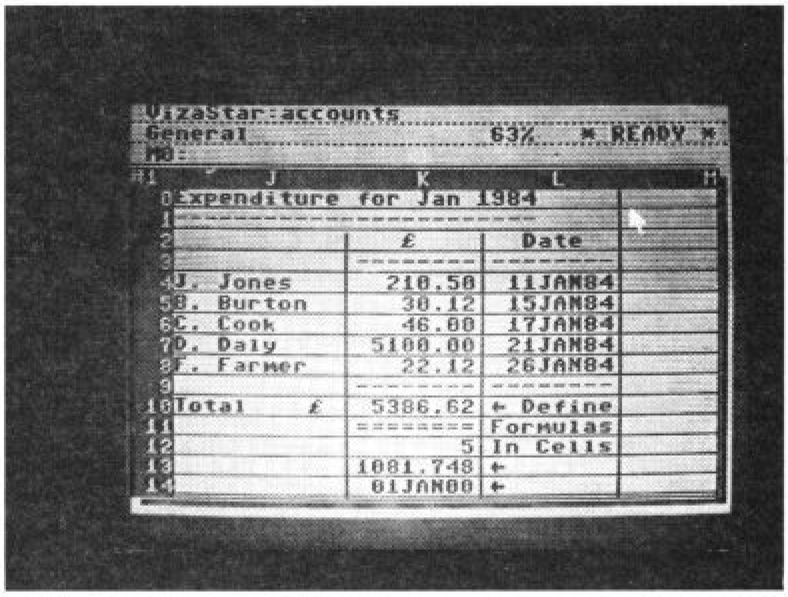
"Both 1-2-3 and Vizastar offer so-called graphics, but I find they're more of a gimmick than a useful option. But the main thing we seem to be proving is that the ordinary home micro has enough power to compete with the bigger business systems."

Terry Palmer's pilot project is still at a very early stage, but he is sufficiently confident in his provisional results to use them as the basis for lectures he is giving to transport users on how to computerise their businesses.

A typical customer record layout on Vizastar's database. Each record can have up to nine 'screen-cards'.

Text, numbers and formulas can be entered on to the Vizastar worksheet which provides a maximum of 63,936 cells.





straints, and consists of simple initial-letter sequences from the spreadsheet's commands. To implement a "find" command in the database from the worksheet, for instance, the user must first press the CBM key to obtain the opening menu:

CELL SHEET FILE PRINT DATA GRAPH

then press "d" for DATA, which produces the sub-menu:

ACCESS TRANSFER USE SETUP OTHER

followed by "a" for ACCESS, which will reveal the first record on the file (if this is the first access), or the most recent record accessed. At the top of the record there is a two-line menu:

KEY NEXT PRIOR FIRST LAST CURR ADD REPLACE DELETE QUIT

If "k" (for KEY) is pressed, the fields of the record will clear, and the name of the required file can be typed in, followed by <f1> to call it from disk.

When programming the spreadsheet, the oblique stroke "/" stands for the CBM key, followed by the initial letters of the menu commands. Function and other control keys can be included in the program by pressing <CTRL> followed by the key required. So the sequence of commands described above can be executed by typing in: **/*dakrecordname* [f1]**

If this is included in column A, then the program can be executed at any time by pressing <f8> (<SHIFT> +<f7>).

Normally, programs have to start at cell A0 (A-zero), but if **S**heet **X**ec is pressed from the opening menu, this starting cell can be changed to anywhere on the sheet. This then becomes the Xec cell start unless it is changed with another SX command, which can also be programmed.

In addition to its ease of learning — because once you've learnt the keystrokes, you can program them in by preceding the initial letters of the commands by the "/" symbol — this has some very powerful additional features, including GOTO LABEL, IF . . . THEN GOTO LABEL, IF END OF FILE THEN GOTO LABEL, PROMPT USER, WAIT, and QUIT commands, each of which are implemented by just two or three keystrokes.

Graphics

The graphics package supplied as standard is fairly simplistic (though much better than the Plus-4's) but I understand that the additional graphics program available on copyable disk (meaning it could be transferred on to all subsequent data disks) is rather more sophisticated. I have not seen this, however.

A few months ago, in noting that VizaStar was now available, I criticised the manual, which I felt was poorly and confusingly written, with a number of errors and omissions, as well as having no index. Subsequently, an errata slip has been produced, but the best news is that the manual has now been rewritten, all the errors corrected, and an index supplied.

It's to be hoped that copies are sent to all registered users, as well as new users, since the poor manual was literally the only fault I could find with this excellent and powerful program.

Vizastar Programmable Spreadsheet
Viza Software
9 Mansion Row,
Brompton, Gillingham,
Kent ME7 5SE
£99.95
£129.95 with 8K ROM expansion supplied on disk (plus ROM cartridge)

SCREEN SCENE

Automan
Commodore 64
Bugbyte
Price £9.50

Presentation: ■■■□□
Skill level: ■■■□□
Interest: ■■■■□
Value for money: ■■■■□

Automan, the game of the TV series, is well put together and of the high standard you'd expect from long established Bugbyte. In this episode the baddies have made an evil copy of Automan who zooms around Megacity planting bombs.

The first stage consists of a high-speed 3-D car chase through the streets of Megacity. At some point evil Automan parks his car and runs off to plant his bomb in a building. You follow him into a Manic Miner style building, find the bomb and defuse it before it blows up. Evidence must also be collected at this stage in order to convict the creep behind it — affectionately known as The Lizzard.

I especially like the dual scenario — two games in one really. Worth buying.



Hyper Biker
Commodore 64
PSS Software
Price £7.95

Presentation: ■■■■□
Skill level: ■■■■□
Interest: ■■■□□
Value for money: ■■■■□

Track and field BMX style, the game consists of six race scenarios. In one you have to negotiate obstacles, another requires you to perform wheelies, then you graduate to more skillful tricks like the long jump and bunny hop. You can play against the computer or up to three friends.

Forward motion is accomplished by whacking the keyboard like a lunatic — beware! I decided I would rather waste a joystick than smash my precious 64 to pieces, but it stood up to the pounding quite well.

The graphics are very well done — witness the perspective on the scrolling screen — objects in the distance move past more slowly than those in the foreground. The music is also excellent. For once I didn't find myself reaching for the volume knob. Great entertainment.



Witch Switch
Commodore 64
English Software
Price: £8.95/cass

Presentation: ■■■□□
Skill level: ■■■□□
Interest: ■■■■□
Value for money: ■■■□□

Witch Switch casts you as a monkey who sets out on a perilous journey to the witches house where he must break a spell threatening the village with molten lava from the erupting volcano.

As you journey through the several stages of the game you can check the progress of the lava creeping ever nearer to your village by pressing the space bar to view the village scene.

There are seven screens (including a swamp, a poisonous lake, and demonic Ravens) to get through before you get to drop the pouch of magic powder into a cauldron to turn the evil witch into a good one.

English Software are beginning to set a very high standard of graphics and gameplay in their games and Witch Switch is no exception. Worthy follow up to the excellent Henry's House.



Water Ski 3D
Commodore 64
Alligata
Price £7.95/cass £11.95/disk

Presentation: ■■■□□
Skill level: ■■■■□
Interest: ■■■■□
Value for money: ■■■■□

This waterlogged version of *Night Driver* or *Pole Position*, is like a gust of fresh, salty air.

The speedboat and tag-along skier are directly in front of you, obeying not only the promptings of your joystick but also centrifugal forces. As you race along, marker buoys show the way ahead while rocks and mountains scroll across the screen to aid the impression of skimming around a circuit. The engine roars as you open the throttle but it's the wash of the sea spray whenever you "heel" into the briny that provides the right atmosphere.

Two shortcomings could cause irritation. The pixels along the edge of the sea shimmer and crashes are marked by an explosion which looks a bit pathetic. That apart, it's chart material.



Frak
Commodore 64
Statesoft
Price £8.95/cass £10.95/disk

Presentation: ■■■□□
Skill level: ■■■□□
Interest: ■■□□□
Value for money: ■■□□□

Steer Neaderthal hero Trogg through the various screens, picking up the objects as you go in this platform type game from Statesoft.

You have to jump from level to level to gather the precariously placed objects. If monsters get in your way you can zap them with your Yo-Yo; this doesn't kill them but simply shoves them out of the way.

Watch out for the flying arrows and heat seeking balloons which prove deadly on contact. When Trog dies a speech balloon comes out of his mouth and says 'FRAK'. I guess that's what troglodytes say when they die.

The graphics are bold and the game as a whole is a more than competent effort at a platform game, but for some reason it just didn't inspire me. Probably more fun on the higher levels (there are some 256 of them) if you can maintain interest long enough to get there.



SCREEN SCENE





Indiana Jones in the Lost Kingdom Commodore 64 US Gold

Price £9.95/cass

Presentation: ■■■□□
Skill level: ■■■□□
Interest: ■■■□□
Value for money: ■■■□□

'Raiders of the Lost Ark' is a dream licence for a software house to base a computer game on.

It has everything. A super hero, non-stop action, a highly developed plot with lots of twists and turns, but above all it's big. Very big.

The game is not based on 'Raiders' or 'Temple of Doom' but is a completely original challenge game with deliberately obscure instructions.

I found this a little frustrating and stumbled from screen to screen for ages, not knowing what was going on. Luckily I had a cheat-sheet from US Gold. This does not come with the game so don't lose this review-strategy guide.

Objective of Screen 1. Transfer the colour of the yellow, red, and blue balls on the left of the screen to the white balls on the right. To absorb the colours Indy simply has to make contact with each ball, cross back across the caverns using the lifts, and ward off the bats with his walking stick.

Objective of Screen 2. Indy has to rearrange the numbers on this screen. The numbers on the bottom of the screen must be made to match up with the numbers going from top to bottom on the left of the screen.

ACTION FREEZE
Top left: Shows screen three, a tough number challenge for Indy in a frozen cavern.
Top right: Screen five — Indy fights the Medusa.
Bottom: The final screen — Indy must collect the chalices.



Objective of Screen 3. Another number challenge — this time you must complete a sequence of nine numbers in groups of three. When the ball is in the correct position it will turn black on the left of the screen. When all three balls have turned black you can go onto the next set of three.

Objective of Screen 4. This is the most difficult of the colour changing screens. All the coloured balls on the right of the screen must be turned white. The colour is obtained from the diamonds on the ledges. When Indy touches these with his cane the cane turns blue. He must now touch the blue ball with his cane, being careful not to let any part of his body make contact with any of the coloured balls.

Objective of Screen 5. Most arcade-like of the six challenges,



Seaside Special Commodore 64 Taskset

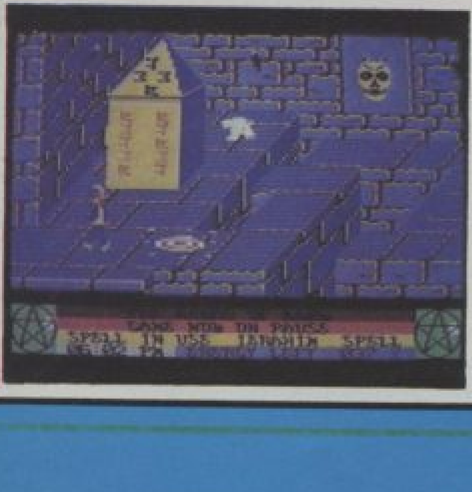
Price £9.95/cass

Presentation: ■■■■□
Skill level: ■■■■□
Interest: ■■■■■
Value for money: ■■■■□

Computer games are being increasingly used for political propaganda. We've had Bruce Carver having a go at the Russians, feminists putting the case against sexism, and now Taskset pitch in to defend the environment with the long-awaited Seaside Special.

The idea of the game is to collect as much radioactive seaweed as possible, take it to Number Ten, and toss it at the 'Polytikians' who appear at the windows. The faces bear an uncanny resemblance to certain members of the Cabinet.

It's tough collecting that seaweed from the beach. You have to dodge the crabs, avoid being shot by the mutant, and watch out for the tide of contaminated water sweeping in and out. If you let the radiation level go into the red you'll drop dead. When you make it to Downing Street



The Staff of Karnath Commodore 64 Ultimate

Price £9.95

Presentation: ■■■■□
Skill level: ■■■□□
Interest: ■■■■□
Value for money: ■■■■□

In the Staff of Karnath you play the intrepid Arthur Pendragon and have journeyed to the castle of the dead wizard Karnath, whose dying spell has shrouded the world under a cloud of evil. To break the spell you must find and destroy the staff hidden under an ancient obelisk by Karnath before his death.

The only way to gain entry to the obelisk is to find the sixteen pieces of a key in the shape of a pentagram, hidden throughout the dozens of castle rooms.

Armed with a magic ring that can cast spells to ward off Karnath's henchmen you must learn to select the right spells.

When you find a piece of the key you must deposit it at the obelisk, being careful not to run out of energy as you battle past the numerous ghouls that congregate around the obelisk.

The graphics are impressive — especially the detail of beds, carpets, paintings, trunks, and

the fifth screen has you trying to get past the multi-headed medusa creature and then hack through the wall at the right of room one. You are now in the Bell Room. Tap the bell with your cane to activate the lift which takes you up to the next bell. this one and the bell will reappear on the floor and open a segment of the "door" between room two and three. You must strike the upper bell six times to get the door open completely. Room three is more of the same though trickier. More bells and an extra elevator.

Objective of Screen 6. Another arcade challenge here in a ledge-hopping, artifact-collecting final screen. You have to collect five chalices. Each time you collect one you have to go back to your starting position to make the next chalice appear.

Conclusion. I wasn't completely bowled over by Indiana Jones. In fairness to Mindscape it has to be said that trying to recreate the thrills induced the films on a computer is like Sinclair C5 against a Ferrari.

The game does have some strong points though — the combination of mathematical puzzles and arcade game-play is original, and Indiana Jones is recognisably the character from the film — even if he is a little small. Complete Indy nuts won't be able to resist this one — but if you want a real super hero game I'd choose Conan.

you have to score five direct hits to finish off a "Polytikian".

The game was programmed by Greenpeace supporter Tony Gibson, with graphics by Mark Harrison. Mr Gibson is considering making a donation to the environmental pressure group from his Seaside Special royalties.

Whatever your views on the environment you will have to admit this is a hellishly addictive game with superb graphics.

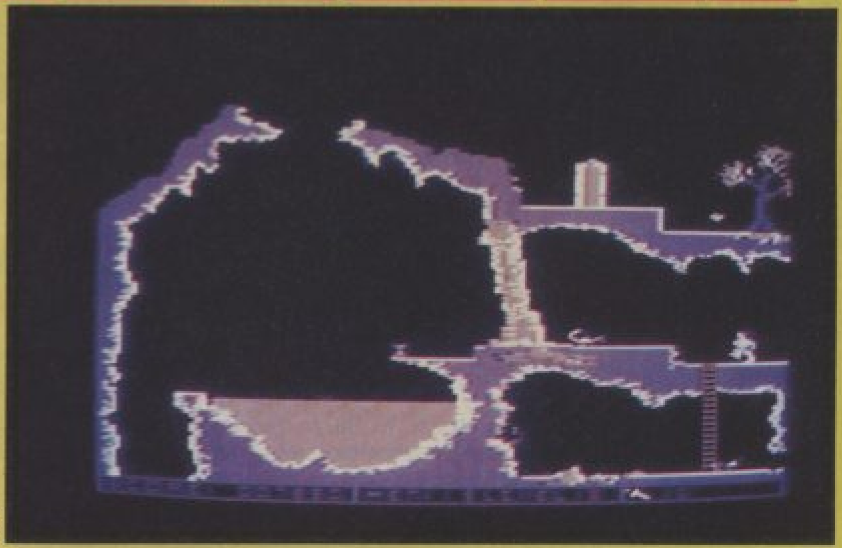
other objects in the various rooms. The moving characters are not quite as impressive as the background and in no way justify the description in the instructions of "cartoon quality". Sound effects are also disappointing.

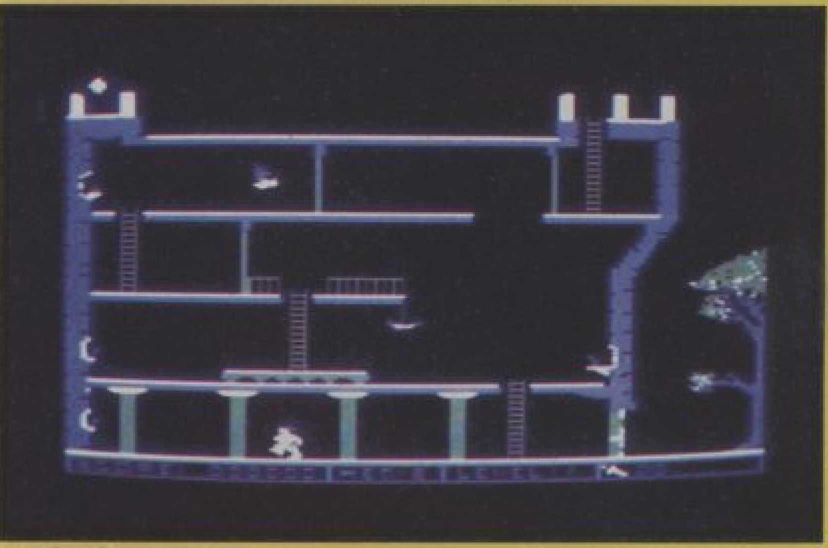
On the plus side Karnath is highly playable — and you certainly won't want to put down the joystick until you've got inside the obelisk.

SCREEN STAR

Conan
Commodore 64
US Gold
Price £9.95/cass
£14.95/disk

Presentation: ■■■■□
Skill level: ■■■□□
Interest: ■■■■□
Value for money: ■■■■□







ACTION FREEZE
Top: Conan sets out on his quest. Exit is top left hand corner. Conan must kill the swooping bird on this screen.
Middle: Screen Two. Exit is bottom left hand corner. The first key is shown bottom right.
Bottom: Conan must exit bottom left. The scorpion in the picture is deadly, our hero must get inside the transporter on the top platform.

Arnold Schwarzenegger has recently been flexing his muscles — playing a robot in the new film 'Terminator' — but for real Arnold fans he will always be Conan.

Conan's ex-Mr Universe biceps first rippled on-screen when Arnold played the title role in the first film adaptation of the classic Marvel Comics character 'Conan the Barbarian'.

The film took more than a hundred million dollars at the box office and has recently been followed by a sequel in which he plays alongside Russell Harty-bashing Grace Jones in 'Conan the Destroyer'.

It was only a matter of time until a software house did a Conan game. Now the time has come with Datasoft's second game in their Famous Names series — called simply *Conan*, with Schwarzenegger's muscles bulging menacingly on the cover of the disk.

In the computer game Conan comes up against his most deadly rival — the evil Volta. The action takes place inside Volta's castle, filled with deadly traps.

Seven screens have to be completed, each filled with nasties like the fierce dragons, glowing flame monsters, giant floating eyeballs, electric spark creatures and lethal lepers. The aim on each screen is to find the gems, place them in gem holders, and find the key to unlock the door to the next level.

Just like Conan himself you can walk, run, jump, and fall from any height without injury — though you must be careful to avoid falling into pools of water, lava pits, fire pits, or the snake pit.

You are armed only with Conan's mighty sword which you can throw at your enemies to kill them and then catch again — boomerang-fashion on its return.

You begin the game with seven Conans and can earn an extra one for touching the bird on certain levels and for really high scores.

The game is basically a multi-screen platform game — though with the real flavour of Conan. Screen One (pictured above) is the beginning of the game. Our hero has to get to the top of the castle and exit at the top left-hand corner of the screen whilst dodging the bird. You must use the sword on this screen — if you don't get that bird at the very start of your climb you'll never make it to the top. Screen Two introduces the first key — Conan has already claimed it in your picture — and the sharper eyed of you will be able to spot it in the bottom right-hand corner. This was the most realistic of the three screens I cracked — jumping from great heights is as far as I could get in this pre-production copy of the game given exclusively to Commodore User. Somehow you've got to get to the next level through the cavern in the bottom left-hand corner of the screen. If any of you ever manage it I'd love to know how it's done.

I can recommend Conan. It's a well thought-out climbing game that does justice to the excellent films and comics.

Conan is the second game in the Datasoft Famous Faces series — the sequel to the highly successful Bruce Lee.

The game is being distributed in the UK by US Gold of Birmingham, and should be available in most leading software shops.

For your chance to win Conan and the rest of the US Gold range see our great competition on page 33.



First World War Aerial Combat...
Fantastic 'Point of View' Arcade Action...
FLIGHTS OF FANTASY
ATARI
64
Exciting 3-D action makes SENTINEL the most realistic point-of-view game you've ever played. You're on a starship command deck with the latest in ultra-sophisticated computerised instrumentation. Use it to navigate through deadly asteroid belts, destroy enemy ships and track their battlestars through intergalactic minefields. Along the way you'll dock and refuel. It's tough duty but you've earned the command. Now can you prevent enemy forces from capturing your home planet? It's all in your hands.
Commodore 64.
BLUE MAX
SENTINEL
You're at the controls for this World War I dogfight game. Shoot down enemy planes, bomb targets, strafe tanks and gun emplacements – there's constant action on the incredible 3-D diagonally scrolling screen. At the same time, you have to keep track of altitude, speed, fuel and damage. Medals don't come easy. You must master a series of flying skills and perform them with pinpoint accuracy. One slip and you've lost it all – even your life. Happy landings, ace!
Commodore 64 and Atari.
SELECTED TITLES AVAILABLE SOON FOR SPECTRUM
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DRELBS
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FORT APOCALYPSE
A lively, imaginative alternative to rockets and bombs. Your Dreib builds squares, his enemies knock them down. Quick reflexes, intelligence and strategy are a must.
Commodore 64 & Atari.
One of the most challenging arcade games available! Incredible 3-D graphics, diagonally scrolling screen, super sound – all in great detail.
Commodore 64.
A multi-level extravaganza! Fire on hazards; negotiate deadly caves; rescue friends! Features superb graphics, unnerving sounds and a constantly scrolling screen.
Commodore 64 & Atari.
U.S. GOLD
All American Software
synsoft

SCREEN SCENE

F-15 Strike Eagle
Commodore 64
US Gold
Price £14.95/cass £14.95/disk

Presentation: ■■■■□
Skill level: ■■■■■
Interest: ■■■■□
Value for money: ■■■□□

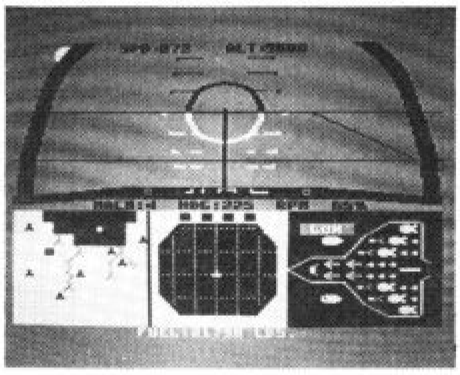
Fifteen sovs is a tidy sum to shell out for any game, even if a 'Flight Manual' is included. The knowledge that this hi-tech, strike aircraft simulation hails from Micro Prose is the sugar coating on a bitter pill.

The first half-an-hour spent in the cockpit was agonising . . . fumble, fumble, fumble . . . what's more the listed dual-joystick controls seem to be for the Atari. Yet after delving into the manual a few times things began to fall into place with the result that I can happily recommend this offering to rich, flight-simulation fans.

As with every program of this type, the view from the 'window' is sketchy by arcade-game standards, but up to par.

You must deal with interceptors through seven missions and four levels of play.

There's enough complexity and depth to satisfy developing, would-be fighter pilots.



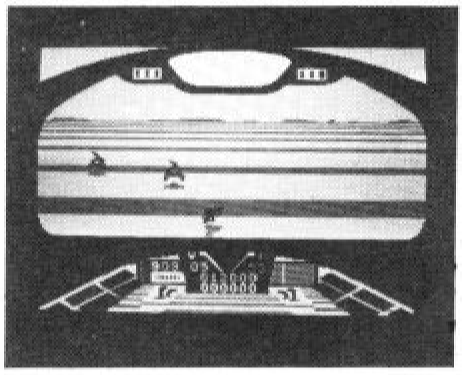
Suicide Strike
Commodore 64
System 3 Software
Price £6.95

Presentation: ■■■□□
Skill level: ■■□□□
Interest: ■□□□□
Value for money: ■■□□□

Though it's against my nature I'm going to try and be positive about this game. On the back of the box is stamped 'From America', as if this were some cast iron guarantee of quality.

Personally, I wouldn't touch Suicide Strike with a barge pole. But don't take my word for it, judge for yourselves. You are presented with a flash looking cockpit and a view of the landscape beyond — not bad graphics here. What actually moves when you tweak the joystick is a little plane at the bottom of the screen, this has complete side to side mobility and will move up the screen about one centimetre. First you are attacked by a wave of helicopters, then tanks, then jets, then you begin to feel drowsy and are overcome by a deep sleep.

Space invaders with frills. So much for being positive.



Congo Bongo
Commodore 64
US Gold
Price £9.95/cass £11.95/disk

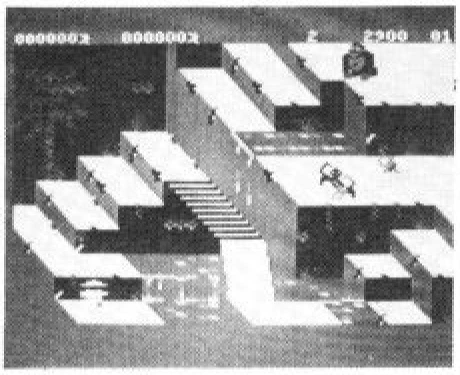
Presentation: ■■□□□
Skill level: ■■□□□
Interest: ■■□□□
Value for money: ■■□□□

Congo Bongo what's gone wrongo. The game was merely a minor success in the arcades when it was launched by Sega eighteen months ago. And a minor hit is all it's likely to become on the 64. Pretty graphics and jolly jingles are no substitute for a basic lack of game-play.

Congo Bongo is another game based on the now extremely hackneyed jungle safari theme. Just two screens of mediocre action. The first challenges you to climb to the top of some ramparts dodging the coconuts being lobbed by the ubiquitous ape at the top of the screen — easy peasy, took me about five minutes.

Screen two is no more than a 3D Frogger — again quite pretty to look at but you should be able to do it with your eyes closed.

The game is really only suitable for children. Experienced games players need not apply.



Shoot The Rapids
Commodore 64
New Generation Software
Price £9.95/cass

Presentation: ■■■■□
Skill level: ■■■□□
Interest: ■■■■□
Value for money: ■■■■□

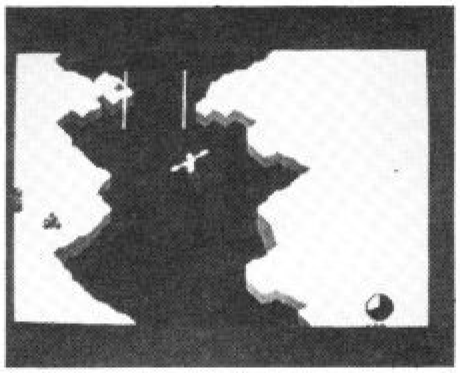
Water sports seem to be all the rage at the moment with two splish-splash games reviewed this month.

Canoeing can be a tricky business at the best of times and the addition of a 64 makes it no easier. To paddle your computerised canoe you move the joystick from left to right — Decathlon-style.

The key to Shoot The Rapids is to get into a nice steady rhythm. Thankfully you don't need to shake the living daylights out of your joystick to build up speed.

Added complications are the clock that ticks away as you struggle to get your kayak through the barriers, the motor launch that appears on later screens, and the beaver who bobs up and down.

A good deal of technique is required to paddle the canoe and get it around the bends in the river. Full marks to New Generation for a highly playable game.



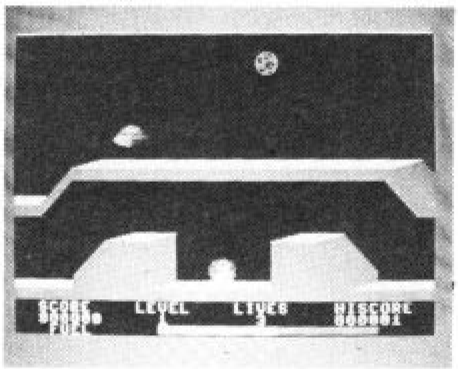
1984—The Day After
Commodore 64
Mastertronic
Price £1.99

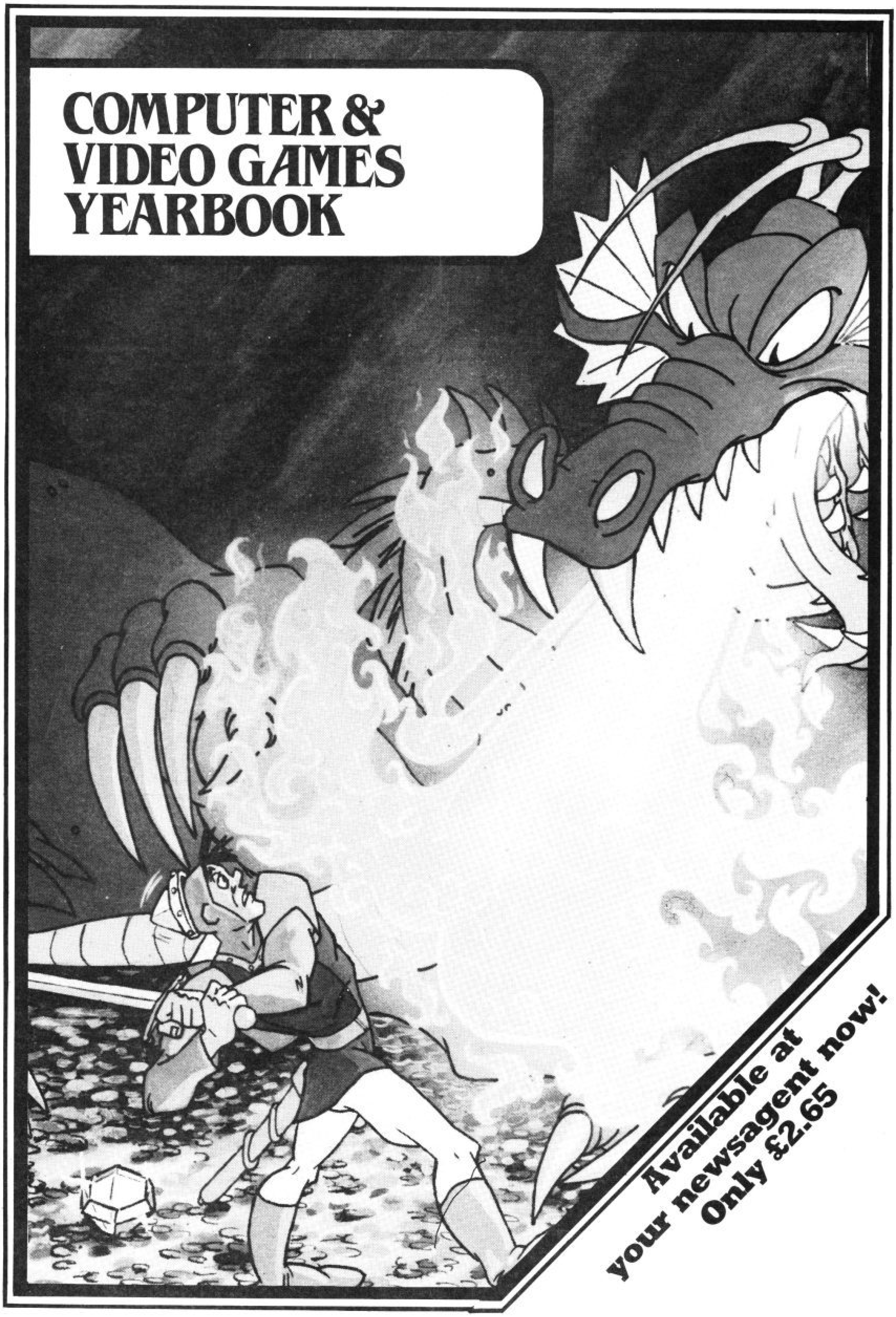
Presentation: ■■■□
Skill level: ■■■■□
Interest: ■■■□□
Value for money: ■■■■■

No flight manual, no convoluted scenario, no hideous aliens, no classical music. But they are not missed in this test of dexterity where you coax a rocket through tunnels and over the contours of stark, scrolling landscapes by delicately prompting the thruster motor.

Apart from the rocks there is a pressing need to avoid saucers from RentaUFO and shells from sentinel guns situated to defend energy deposits. You mustn't touch anything . . . use the tractor beam to suck in the pink parcels whilst hovering, then off to the next deposit.

The sole, addictive, quality of the game (very well exploited) is the essential precision manoeuvring of the rocket, achieved by marrying bursts on the thruster with keen directional control. If you already have a "Lander" program you probably won't want this; otherwise at £2 it's a must.




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SCREEN SCENE

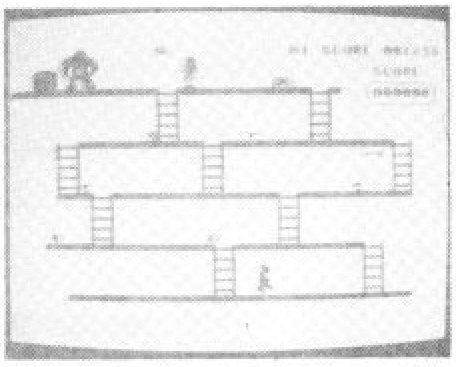
Roller Kong
Commodore 16
Melbourne House
Price £5.95

Presentation: ■■□□□
Skill level: ■■■□□
Interest: ■■□□□
Value for money: ■■□□□

Whenever a new machine hits the High Street the first games to follow always seem a little disappointing simply because you can't expect programmers to know a machine inside out within a few weeks of unwrapping it. But I suspect software houses are a little too eager to get games on the market first at the expense of quality — no competition is good competition as they say.

Roller Kong is regrettably no exception to the above rule. In the umpteenth version of the classic arcade original you control our hero and attempt to rescue his enfeebled mate from Kong's evil grip. Negotiate your way from the bottom of the screen to the top via a number of platforms connected by ladders and lifts.

The below average graphics and sound and general lack of anything exciting or original make this one worth passing



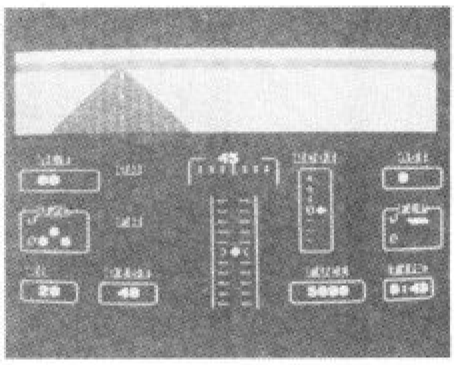
Flight Path 737
Anirog
C16
Price £6.95

Presentation: ■■■■□
Skill level: ■■■□□
Interest: ■■■■□
Value for money: ■■■■□

Flight Path 737 has you sitting on the runway in the inevitable 'high performance jet airliner' making your final preparations before take-off.

A few basics to remember here such as pointing your nose in the right direction and putting the flaps down. This accomplished you can whack up the power to full throttle, scream down the runway and execute a perfect take off into the cloudless sky above — hopefully avoiding the mountains conveniently situated a stones' throw from the departure lounge.

There are six skill levels, ranging from first solo to test pilot. As you progress life is made more difficult by higher mountains, shorter runways, crosswinds, and engine fires. I would say this is more of a game than a so-called serious flight simulator. Poor graphics detract from the feel of reality. Good fun for those with no allusions to the real thing.



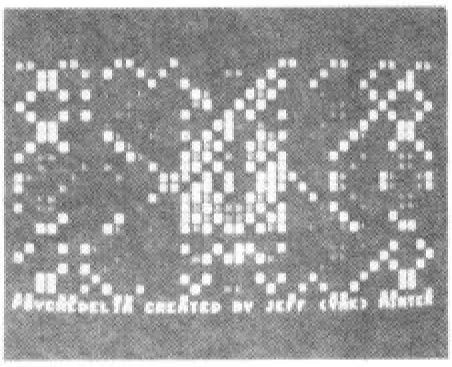
Psychedelia
Commodore 16
Llamasoft
Price £6.00

Presentation: ■■■■■
Skill level: N/A
Interest: N/A
Value for money: N/A

Congratulations to Jeff Minter for the most original piece of software I think I've ever seen. *Psychedelia* is a kind of cosmic kaleidoscope. The idea is to switch the lights off, stick your favourite record on the turntable, and freak out to your own light show.

Using a joystick with the fire button depressed, you move the cursor around the screen in whichever direction takes your fancy. This causes one of the preset patterns to flow, twist, and leap across the screen with startling results. It's really quite beautiful! There are sixteen preset patterns in all which you can define yourself once you get the hang of things.

Other parameters such as symmetry, cursor speed and pulse width can be altered to create special effects. When a pleasing result is obtained it can be recorded and played back. Impressive stuff.



Villain
VIC 20 (+8K)
Interceptor
Price £6.00

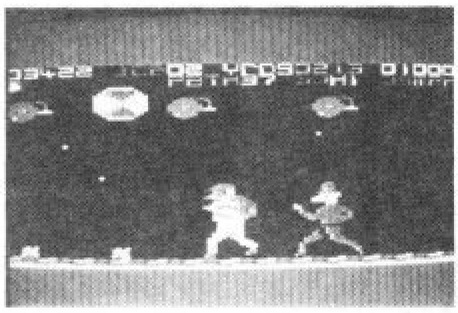
Presentation: ■■■■■
Skill level: ■■■■□
Interest: ■■■■□
Value for money: ■■■■■

I've got one of those miserable, standard issue Commodore joysticks plugged into my Vic, so I'm not too worried about the pounding it'll receive from this program. If you have cast longing glances at the athletic games on the 64 and fancied doing a bit of sprinting, well this is a cops-'n'-robbers chase where you have to be very fast off the mark.

Great, you've qualified for job number 1, where you have to outrun the Bill over 1,000 paces.

Before the next level there is an exhausting interlude; just see how far you can run before the Boys in Blue nab you. The action gets more and more involved and your joystick hand will get weaker and weaker.

Excellent sound, graphics, game play and general conception overall. You may tire physically but boredom will not be a problem.



Front Line
Commodore 64
Joystick only
Interceptor
Price £7.00

Presentation: ■■■■□
Skill level: ■■■□□
Interest: ■■■□□
Value for money: ■■■■□

You've been silly enough to volunteer for a ludicrously testing and highly unlikely mission. That is, to deny the allied supply dumps to the rampaging enemy.

You need to whisk round a fair sized island (only a small section appears on the screen at a time) in the latest armoured vehicle, dividing your time between wiping-out fuel dumps (stocking up with shells and armour plating while you're about it) and engaging the enemy.

Physical features, trees etc., can't be blasted away, so you have to trundle around them and as the tank isn't amphibious, river crossings can only be made by seeking out bridges.

Pictorially the program features a bird's eye view of the battleground with all the characters easily recognisable.

Prepare to engage enemy.

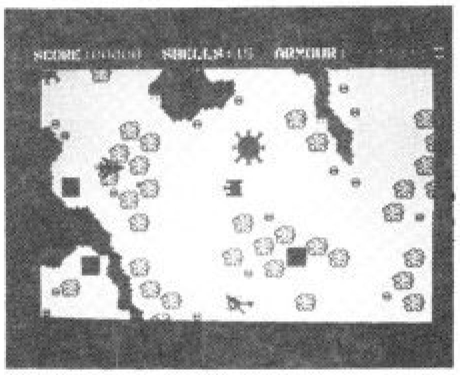


CHART HITS OF 1984

SOFTWARE TOP 30

	Title	Publisher	Highest Position	Weeks in Chart
1	**Beach-Head**	Access/US Gold	2nd	15
2	**Daley Thompson's Decathlon**	Ocean	1st	9
3	**Hunchback**	Ocean	2nd	8
4	**Hungry Horace**	Ocean	7th	8
5	**Manic Miner**	Software Projects	1st	8
6	**International Soccer**	Commodore	2nd	12
7	**Space Pilot**	Anirog	6th	9
8	**Decathlon**	Activision	3rd	7
9	**Valhalla**	Legend	6th	6
10	**Flight Path 737**	Anirog	11th	7
11	**Select One Games**	Computer Records	7th	5
12	**Aztec Challenge**	Comi/US Gold	10th	6
13	**Hobbit**	Melbourne House	8th	12
14	**Monty Mole**	Gremlin Graphics	10th	6
15	**Jet Set Willy**	Software Projects	7th	4
16	**Tales of Arabian Nights**	Interceptor Micros	10th	6
17	**Return of the Mutant Camels**	Llamasoft	10th	4
18	**Ghostbusters**	Activision	1st	2
19	**Blagger**	Alligata	16th	8
20	**Death Star Interceptor**	System 3	11th	3
20	**Son of Blagger**	Alligata	12th	5
22	**Zaxxon**	Access/US Gold	13th	3
23	**Pilot 64**	Abbex	16th	5
24	**Twin Kingdom Valley**	Bug Byte	19th	4
24	**Crazy Kong**	Interceptor Micros	14th	3
26	**Raid Over Moscow**	Access/US Gold	5th	1
27	**Suicide Express**	Gremlin Graphics	16th	2
28	**Super Pipeline**	Taskset	13th	2
28	**Micro Olympics**	Data Base/Micro User	10th	1
28	**Astro Chase**	State Software	14th	2

GENERAL CHART

	Title	Publisher	Computer	Highest Position	Weeks in Charts
1	**Jet Set Willy**	Software Projects	Spectrum	1st	19
2	**Fighter Pilot**	Digital	Spectrum	2nd	16
3	**Beach-Head**	Access/US Gold	C64	2nd	15
4	**Manic Miner**	Software Projects	Spectrum	2nd	16
5	**Sabre Wulf**	Ultimate	Spectrum	1st	10
6	**Daley Thompson's Decathlon**	Ocean	C64	1st	9
7	**Daley Thompson's Decathlon**	Ocean	Spectrum	1st	8
8	**Code Name Matt**	Micro Mega	Spectrum	3rd	12
9	**Trashman**	New Generation	Spectrum	5th	11
10	**Full Throttle**	Micromega	Spectrum	2nd	10
10	**Tornado Low Level**	Vortex	Spectrum	2nd	10
12	**Night Gunner**	Digital	Spectrum	3rd	11
13	**Chequered Flag**	Sinclair	Spectrum	2nd	12
14	**Psytron**	Beyond	Spectrum	3rd	10
15	**Hunchback**	Ocean	C64	2nd	8
15	**Hungry Horace**	Ocean	C64	7th	8
17	**Manic Miner**	Software Projects	C64	1st	8
18	**Lords of Midnight**	Beyond	Spectrum	6th	10
19	**Hunchback**	Ocean	Spectrum	4th	8
20	**Elite**	Acorn	BBC	2nd	6

These charts were compiled by EMAP Market Research from 1984 NOP Market Research Charts as printed in the Daily Mirror and Computer and Video Games magazine



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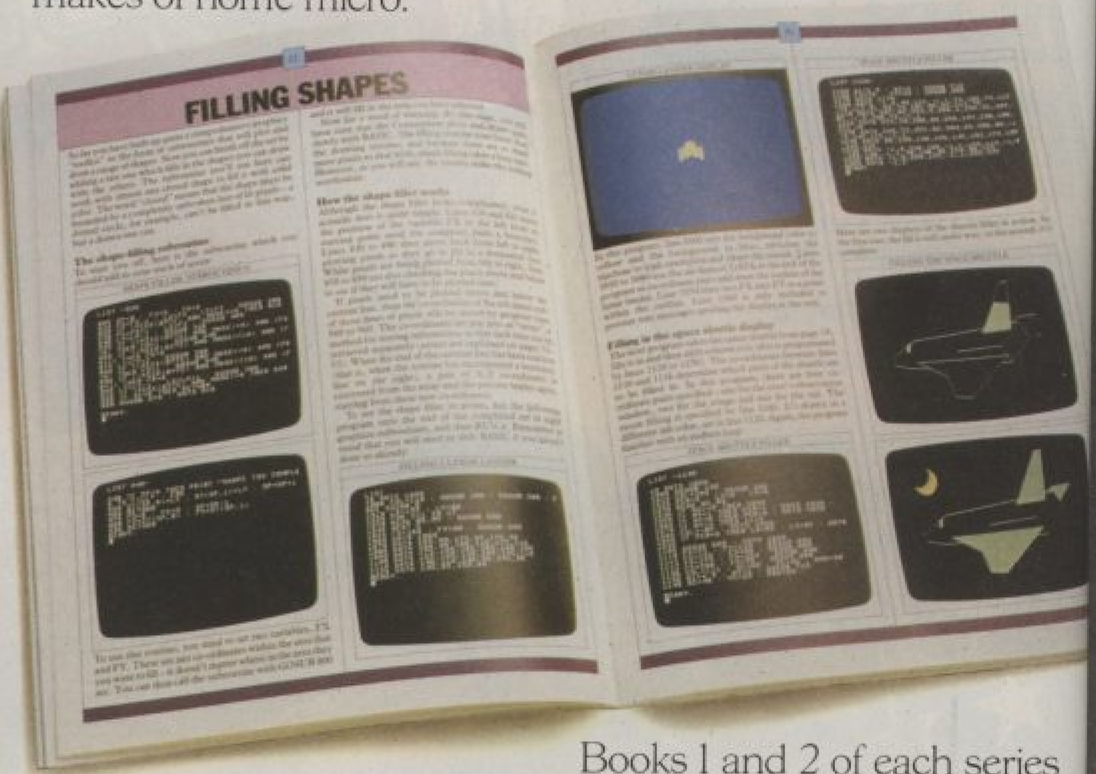
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VICTUALS

HOW TO USE EASY ENTER

EASY ENTER!

How we reproduce listings

We have two methods of presenting listings. When we can, we run them through a coverter program that replaces the hieroglyphic control codes with more meaningful symbols.

When you see . . .	It means . . .	And you . . .
(CU)	*cursor up*	press the 'cursor up' key (shifted)
(CD)	*cursor down*	press the 'cursor down' key
(CL)	*cursor left*	press the 'cursor left' key (shifted)
(HOM)	*cursor to the top lefthand corner*	press the HOME key
(CLS)	*clear*	press the CLR key (shifted)
(DEF)	*insert*	press the INSert key (shifted)
(BLK)	*change to black*	press the BLK key (CTRL) and 1)
(WHT)	*change to white*	press the WHT key (CTRL and 2)
(RED)	*change to red*	press the RED key (CTRL and 3)
(CYN)	*change to cyan*	press the CYN key (CTRL and 4)
(PUR)	*change to purple*	press the PUR key (CTRL and 5)
(GRN)	*change to green*	press the GRN key (CTRL and 6)
(BLU)	*change to blue*	press the BLU key (CTRL and 7)
(YEL)	*change to yellow*	press the YEL key (CTRL and 8)
(REV)	*reverse on*	press the RVS ON key (CRTL and 9)
(OFF)	*reverse off*	press the RVS OFF key (CTRL and 0)
(SPC)	*space*	press the space bar; repeat the specified number of times

(G<key) press key together with CBM key
(G>key) press specified key together with SHIFT key

These listings we generally run out on a letter-quality printer, though, and conventional graphics can't be handled on a daisywheel. So some listings are done on a Commodore printer, in which case you may see the standard control codes:

```
CLR            ... ■ (REVERSED HEART)
HOME           ... ■ (REVERSED S)
RVS ON         ... ■ (REVERSED R)
RVS OFF        ... ■ (REVERSED UNDERSCORE)
CURSOR UP      ... ■ (REVERSED SHIFTED ●)
CURSOR DOWN    ... ■ (REVERSED Q)
CURSOR LEFT    ... ■ (REVERSED UPWARD BAR - SHIFTED H)
CURSOR RIGHT   ... ■ (REVERSED LEFT SQUARE BRACKET)
SET COLOUR TO
      BLACK    ... ■ (REVERSED SHIFTED F)
      WHITE    ... ■ (REVERSED E)
      RED      ... ■ (REVERSED £)
      CYAN     ... ■ (REVERSED COMMODORE-SHIFTED ●)
      PURPLE   ... ■ (REVERSED COMMODORE-SHIFTED -)
      GREEN    ... ■ (REVERSED UP ARROW)
      BLUE     ... ■ (REVERSED LEFT ARROW)
      YELLOW   ... ■ (REVERSED PI SIGN)
THE FUNCTION KEYS CAN BE INCORPORATED INTO PRINT STATEMENTS TOO.
AS WITH THE OTHER NON-ALPHANUMERIC KEYS, THEY APPEAR AS SPECIAL
SYMBOLS IN A LISTING
F1 ... ■          F2 ... ■
F3 ... ■          F4 ... ■
F5 ... ■          F6 ... ■
F7 ... ■          F8 ... ■
```

When you see any of the codes prefixed by a number, you must press the appropriate key the same number of times.

for example:

(3SPC)
means – press the spacebar three times

or

(5CD)
means – press 'cursor down' key five times

January Games Supplement amendments

A few technical errors in our January Games Supplement slipped past the hawk eyes of our Commodore User technical staff. Here's a list of all the bugs we've managed to spot:

Easy Enter key (page 35): [G>key] means press specified key together with SHIFT.

Francis Drake Adventure: Oops, we missed a few lines off the beginning of the listing — here they are:

```
10 REM FRANCIS DRAKE ADVENTURE
20 REM (C) G LUDINSKI 1983
30 DIMM$(17)
40 DEF FNRN(MAX)=INT(RND(1)*MAX+1)
```

Q-Bert: when you see [G>\] you must press SHIFT together with '£' sign

Destroyer: Line 9060 should read: YC = 70—10*SIN(N*π/16)

Stuntman: the " " sign means you press the spacebar

Everest: this program was listed using an 'easy enter' system different to our own. If you've not worked it out already, copies of the Key can be obtained by writing to us here at Commodore User.

VICTUALS

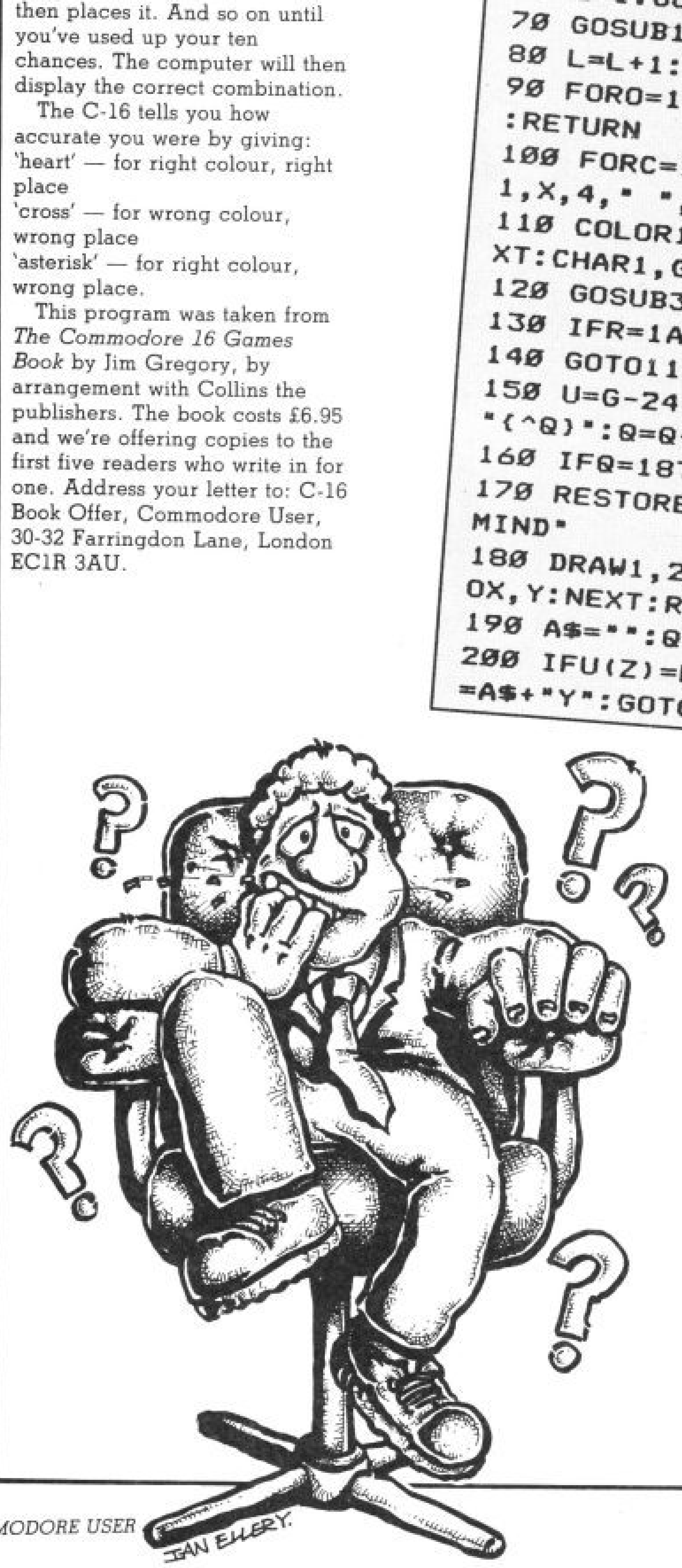
MICRO MIND — FOR THE COMMODORE 16

Versions of Mastermind can be found for virtually all micros. So why should the C-16 be left out? The object of the game is to work out what the secret colour combination is by placing coloured markers in a row. 'S' and 'A' are used to select colours by moving an arrow to the correct colour. The spacebar then places it. And so on until you've used up your ten chances. The computer will then display the correct combination.

The C-16 tells you how accurate you were by giving:
'heart' — for right colour, right place
'cross' — for wrong colour, wrong place
'asterisk' — for right colour, wrong place.

This program was taken from *The Commodore 16 Games Book* by Jim Gregory, by arrangement with Collins the publishers. The book costs £6.95 and we're offering copies to the first five readers who write in for one. Address your letter to: C-16 Book Offer, Commodore User, 30-32 Farringdon Lane, London EC1R 3AU.

```
10 REM >>>>>>>>>MICRO MIND<<<<<<<
20 REM >>>>>>GREG/ANDY/JIM<<<<<<
30 FORT=1TO6:READP(T),S(T):NEXT:VOL8:COLOR
0,1:COLOR4,1:GRAPHIC1
40 SCNCLR:GOSUB170:G=25:H=24:Z$="   ":FORA=
1TO4:X=(A*4)-2:B$="{^Q}{^W}"
50 CHAR1,X,2,Z$,1:NEXT:FORY=4TO22STEP2:FOR
X=2TO16STEP4:CHAR1,X,Y,B$:NEXTX,Y
60 L=1:GOSUB90
70 GOSUB100:GOSUB190:IFA$="YYYY"THEN300
80 L=L+1:IFL=11THEN290:ELSEGOTO70
90 FORO=1TO4:N=INT(RND(1)*6)+1:N(O)=N:NEXT
:RETURN
100 FORC=1TO6:COLOR1,P(C),S(C):X=C+24:CHAR
1,X,4," ",1:NEXT:Q=2
110 COLOR1,2,7:CHAR1,G,5,"^":FORT=1TO20:NE
XT:CHAR1,G,5," "
120 GOSUB350:IFE=1ANDG>25THENG=G-1
130 IFR=1ANDG<30THENG=G+1:ELSEIFF=1THEN150
140 GOTO110
150 U=G-24:COLOR1,P(U),S(U):CHAR1,Q,L*2+2,
"{^Q}":Q=Q+4:U(Q/4)=U
160 IFQ=18THENRETURN:ELSEGOTO110
170 RESTORE380:COLOR1,2,7:CHAR1,4,0,"MICRO
MIND"
180 DRAW1,200,189:FORT=1TO43:READX,Y:DRAWT
OX,Y:NEXT:RETURN
190 A$="":Q=3:COLOR1,9,5:FORZ=1TO4
200 IFU(Z)=N(Z)THENCHAR1,Q,L*2+2,"{^S}":A$
=A$+"Y":GOTO220
```



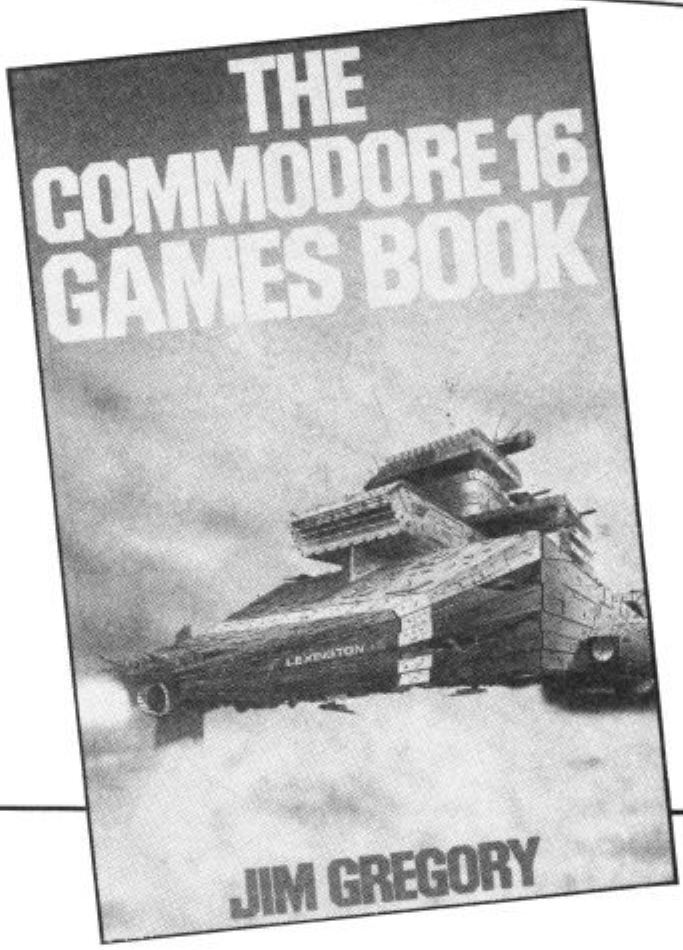


ILLUSTRATION: IAN ELLERY

```
210 CHAR1,Q,L*2+2,"{^V}":A$=A$+"X"
220 Q=Q+4:NEXT:Q=3:S=0:FORZ=1TO4
230 IFMID$(A$,Z,1)="Y"THENSOUND1,100,10:GO
TO270
240 FORW=1TO4
250 IFU(Z)=N(W)ANDMID$(A$,W,1)="X"THENCHAR
1,Q,L*2+2,"*":GOSUB280
260 NEXT:IFS=0THENSOUND1,450,10
270 Q=Q+4:SOUND1,0,5:NEXT:RETURN
280 SOUND1,300,10:S=1:RETURN
290 M$="SORRY":GOTO310
300 M$="DID IT IN "+STR$(L)+" TRYS"
310 FORA=1TO4:M=N(A):COLOR1,P(M),S(M):X=(A
*4)-2:CHAR1,X,2,Z$,1:NEXT
320 CHAR1,23.6,M$
330 CHAR1,24,15,"TRY AGAIN"
340 GOSUB350:IFF=0THEN340:ELSEGOTO40
350 E=0:R=0:F=0:K=PEEK(198):IFK=10THENE=1
360 IFK=13THENR=1:ELSEIFK=60THENF=1
370 RETURN:DATA3,2,5,4,6,3,8,7,4,5,7,3
380 DATA206,177,202,173,192,172,189,168,18
9,166,193,159,189,156,187,152,190
390 DATA150,188,148,186,146,188,143,190,14
1,191,138,191,135,189,133,179,133
400 DATA176,130,176,128,178,126,188,114,19
0,106,192,97,200,87,212,79,230,75
410 DATA238,74,250,77,262,81,271,90,276,98
,278,108,278,114,276,122,275,132
420 DATA272,142,270,150,267,160,264,164,26
0,168,254,174,255,177,270,189
```

by Jim Gregory

```
C O L O U R S
{BLK}= BLACK=(CTRL+1)
{WHT}= WHITE=(CTRL+2)
{BLK}=    RED=(CTRL+3)
{CYN}=  CYAN=(CTRL+4)
{PUR}=PURPLE=(CTRL+5)
{GRN}= GREEN=(CTRL+6)
{BLU}=  BLUE=(CTRL+7)
{YEL}=YELLOW=(CTRL+8)
{OR}=ORANGE=(CBM+1)
{BRN}=BROWN =(CBM+2)
{RVS ON}=RVS ON=(CTRL+9)
{RVS OFF}=RVS OFF=(CTRL+0)
{CUR L}=CRSR LEFT
{CUR RT}=CURSOR RIGHT
{CUR UP}=CURSOR UP
{CUR DN}=CURSOR DOWN
{HOME}=HOME CURSOR
{CLR}=CLEAR SCREEN
o=FLASH ON =CTRL+COMMA
¯=FLASH OFF=CTRL+FULL STOP
CHARACTER CODES
--------------
{*X}=CBM KEY + KEY INDICATED
{^X}=SHIFT KEY + KEY SHOWN
```

VICTUALS

SOLITAIRE — FOR THE COMMODORE 16

EASY ENTER

Here's a good computer version of the ever-popular Solitaire game. Remember how you play? There are 33 holes and 32 pegs. You have to remove pegs by jumping over a peg into an adjacent hole, ending up with just one peg in the middle.

Just position the cursor over the peg to be moved using the cursor control keys. Press the spacebar to confirm the choice. Then position the cursor over the vacant hole and press the spacebar to execute the move. Press 'q' to quit at any time.

This version has at least two advantages over the original: bleeps tell you whether you've made a good or illegal move and, since the pegs are on-screen, you can't lose them . . .

```
30 REM  * SOLITAIRE BY M. THOMSON  *
60 C$=CHR$(147):H$=CHR$(19):D$=CHR$(17):R$=CHR$(29):U$=CHR$(145):L$=CHR$(157)
70 RV$=CHR$(18):RO$=CHR$(146):UC$=CHR$(142):LC$=CHR$(14):BL$=CHR$(31)
80 CR$=CHR$(13):Y$=CHR$(113):N$=CHR$(119):FORN=1TO22:P$=P$+D$:NEXT
90 DEFFNU(X)=X-80:DEFFND(X)=X+80:DEFFNL(X)=X-2:DEFFNR(X)=X+2
100 PRINTC$BL$LC$;:POKE53281,15:POKE53280,15
110 FORN=1TO7:PRINTD$R$R$;:NEXT:PRINT"[G>S]OLITAIRE":PRINTSPC(14)"---------"D$D$
120 PRINTSPC(9)"[G>P]RESS [G>S]PACE TO PLAY"D$D$
150 GETK$:IFK$<>" "THEN150
550 PRINTC$UC$;
560 PRINTCHR$(117);:FORN=1TO37:PRINTCHR$(99);:NEXT:PRINTCHR$(105);" ";
570 FORN=1TO19:PRINTCHR$(98);SPC(37);CHR$(98);" ";:NEXT
580 PRINTCHR$(106);:FORN=1TO37:PRINTCHR$(99);:NEXT:PRINTCHR$(107);
590 PRINTH$D$D$;
600 FORN=1TO2:PRINTCR$;SPC(17);:FORP=1TO3:PRINTY$;CHR$(32);:NEXT:NEXT
610 FORN=1TO3:PRINTCR$;SPC(13);:FORP=1TO7:PRINTY$;CHR$(32);:NEXT:NEXT
620 FORN=1TO2:PRINTCR$;SPC(17);:FORP=1TO3:PRINTY$;CHR$(32);:NEXT:NEXT
630 NS=1443:OS=NS:C=32:POKENS,87
640 GOSUB10000
650 FLAG=0
660 POKE204,0
670 GETK$:IFK$<>D$ANDK$<>R$ANDK$<>U$ANDK$<>L$ANDK$<>" "ANDK$<>"Q"THEN670
680 IFK$=" "THENPOKE204,1:POKENS,PEEK(NS)AND127:GOTO760
690 IFK$="Q"THENPOKE204,1:POKENS,PEEK(NS)AND127:GOTO900
700 IFK$=D$THENOS=NS:NS=FND(NS)
710 IFK$=R$THENOS=NS:NS=FNR(NS)
720 IFK$=U$THENOS=NS:NS=FNU(NS)
```

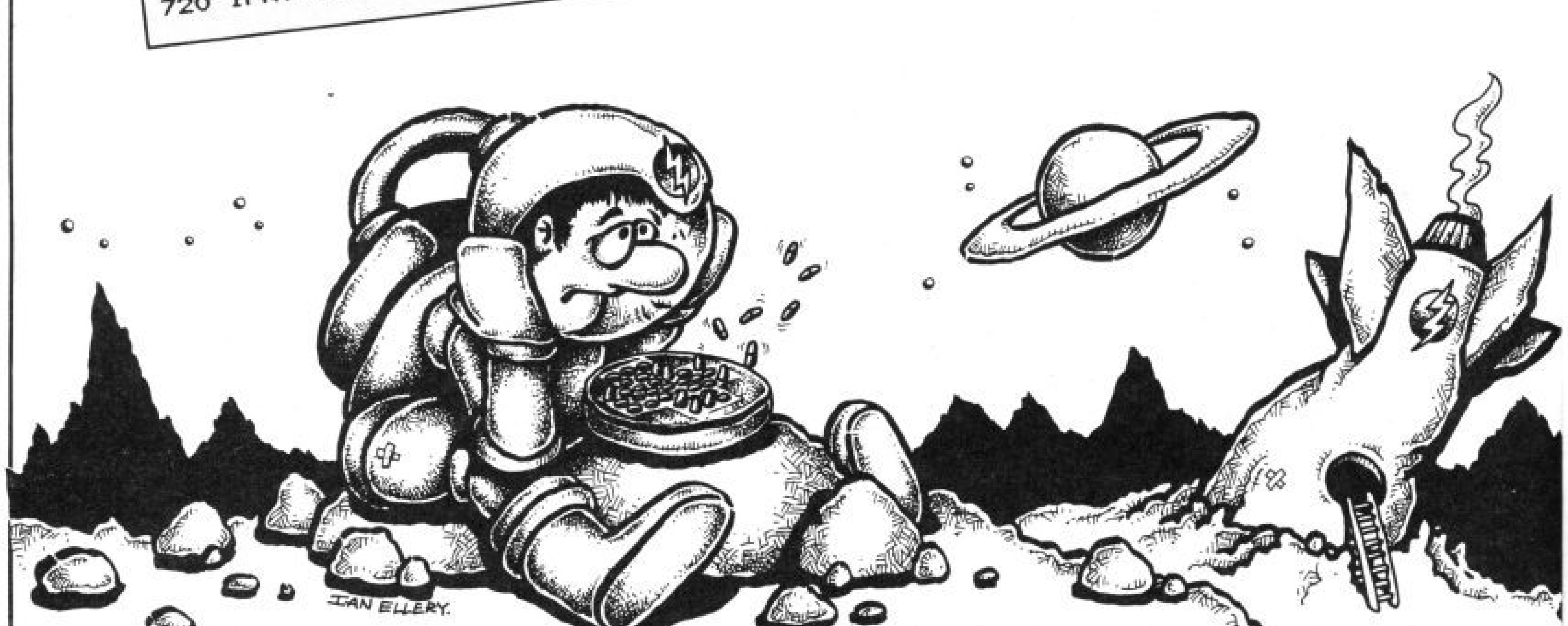


ILLUSTRATION: IAN ELLERY

by M Thomson

```
730 IFK$=L$THENOS=NS:NS=FNL(NS)
740 IFPEEK(NS)=32THENNS=OS:GOTO670
750 POKE204,1:PRINTK$K$;:POKEOS,PEEK(OS)AND127:GOTO660
760 IFFLAGTHEN800
770 IFPEEK(NS)<>81THENGOSUB10002:GOTO650
780 F=22:GOSUB12000:GOSUB10001
790 FLAG=1:PEG=NS:GOTO660
800 IFPEEK(NS)<>87THENGOSUB10002:GOTO650
810 D=NS-PEG
820 IFABS(D)<>4ANDABS(D)<>160ORPEEK(PEG+D/2)<>81THENGOSUB10002:GOTO650
830 POKEPEG,87:POKEPEG+D/2,87:POKENS,81:C=C-1
840 IFC=1ANDPEEK(1443)=81THENPRINTC$D$D$D$D$"WELL DONE!":GOTO910
850 F=22:GOSUB12000
860 GOTO640
900 PRINTC$D$D$D$D$"HARD LUCK!......ONLY"C"LEFT!"
910 PRINTD$D$"ANOTHER GAME ? "CR$
920 GETK$
930 IFK$="Y"THENRUN
940 IFK$<>"N"THEN920
950 END
10000 M$="MOVE WHICH PEG ? ..":GOTO11000
10001 M$="MOVE TO WHERE ? ...":GOTO11000
10002 M$="ERROR ! ..........."
10010 F=8:GOSUB12000:GOSUB11000:FORD=0TO500:NEXT:GOTO10000
11000 POKE204,1:PRINTH$P$M$;
11010 PRINTH$;:PP=NS-1024:Y=INT(PP/40):X=PP-Y*40
11020 FORP=1TOX:PRINTR$;:NEXT:FORP=1TOY:PRINTD$;:NEXT:RETURN
12000 S=54272:FORN=0TO23:POKES+N,0:NEXT
12010 POKES+24,15:POKES,143:POKES+1,F:POKES+5,9:POKES+6,249:POKES+4,17
12020 POKES+4,16:POKES+5,0:RETURN
```



ICTUALS

GRAF-VICS — FOR THE VIC-20 (UNEXPANDED)

```
10 PRINT"[CLS][8CD][6CR]GRAF-VICS":PRINT"[5CR]*----------*"
20 PRINT"[3CD][2CR]BY M.D.MACDONALD."
30 POKE36879,187:SC=30720:SS=7703
40 POKE51,255:POKE52,27:POKE55,255:POKE56,27
50 FORI=0TO511:POKE7168+I,PEEK(32768+I):NEXTI
60 FORT=0TO39:READA:POKE7632+T,A:NEXTT
70 FORT=0TO7:READA:POKE7432+T,A:NEXTT
80 POKE36869,255
90 FORI=0TO31:POKE7448+I,0:NEXTI
100 FORI=32TO39:POKE7448+I,255:NEXTI
110 PRINT"[CLS]"
120 FORT=1TO16:POKE7680+T,61
130 POKE8054+T,58:POKE7680+T*22,59
140 POKE7697+T*22,60:NEXTT
150 POKE7689,33:POKE7878,62:POKE7873,33:POKE8062,62
160 FORXX=0TO15
170 FORYY=0TO15:POKESS+XX+YY*22,32
180 POKESS+XX+YY*22+SC,0:NEXTYY:NEXTXX
190 IFRR=1THEN710
200 POKE7743,35:POKE7765,36:POKE7744,37:POKE7766,38
210 POKE38463,0:POKE38485,0:POKE38464,0:POKE38486,0
220 PRINT"[HOM][18CD]"
230 PRINT"U,D,L,R,I,O,C,B,P,N,X,E"
240 GETA$
250 IFA$="C"THENF=32:G=0:GOTO480
260 IFA$="B"THENF=39:G=255:GOTO480
270 IFA$="I"THENF=39:GOTO530
280 IFA$="O"THENF=32:GOTO530
290 IFA$="P"THEN600
300 IFA$="E"THEN810
310 IFA$="N"THEN820
320 IFA$="L"THENX=X-1:GOTO430
330 IFA$="R"THENX=X+1:GOTO440
340 IFA$="U"THENY=Y-1:GOTO450
350 IFA$="D"THENY=Y+1:GOTO460
360 IFA$="X"THEN930
370 LL=SS+X+Y*22:OL=PEEK(LL)
380 POKELL,42:POKELL+SC,2
390 FORT=1TO100:NEXTT
400 POKELL,OL:POKELL+SC,0
410 FORT=1TO100:NEXTT
420 GOTO240
430 IFX<0THENX=0:GOTO240
440 IFX>15THENX=15:GOTO240
450 IFY<0THENY=0:GOTO240
460 IFY>15THENY=15
470 GOTO240
480 FORXX=0TO15
490 FORYY=0TO15
500 POKESS+XX+YY*22,F:NEXTYY:NEXTXX
510 FORI=0TO31:POKE7448+I,G:NEXTI
520 GOTO240
530 POKESS+X+Y*22,F
540 X1=7:Y1=0:IFX>7THENX1=15:Y1=16
550 CC=0
560 FORZZ=0TO7
570 IFPEEK(SS+Y*22+X1-ZZ)=39THENCC=CC+2^ZZ
580 NEXTZZ
590 POKE7448+Y1+Y,CC:GOTO240
600 PRINT"[CLS]"
```

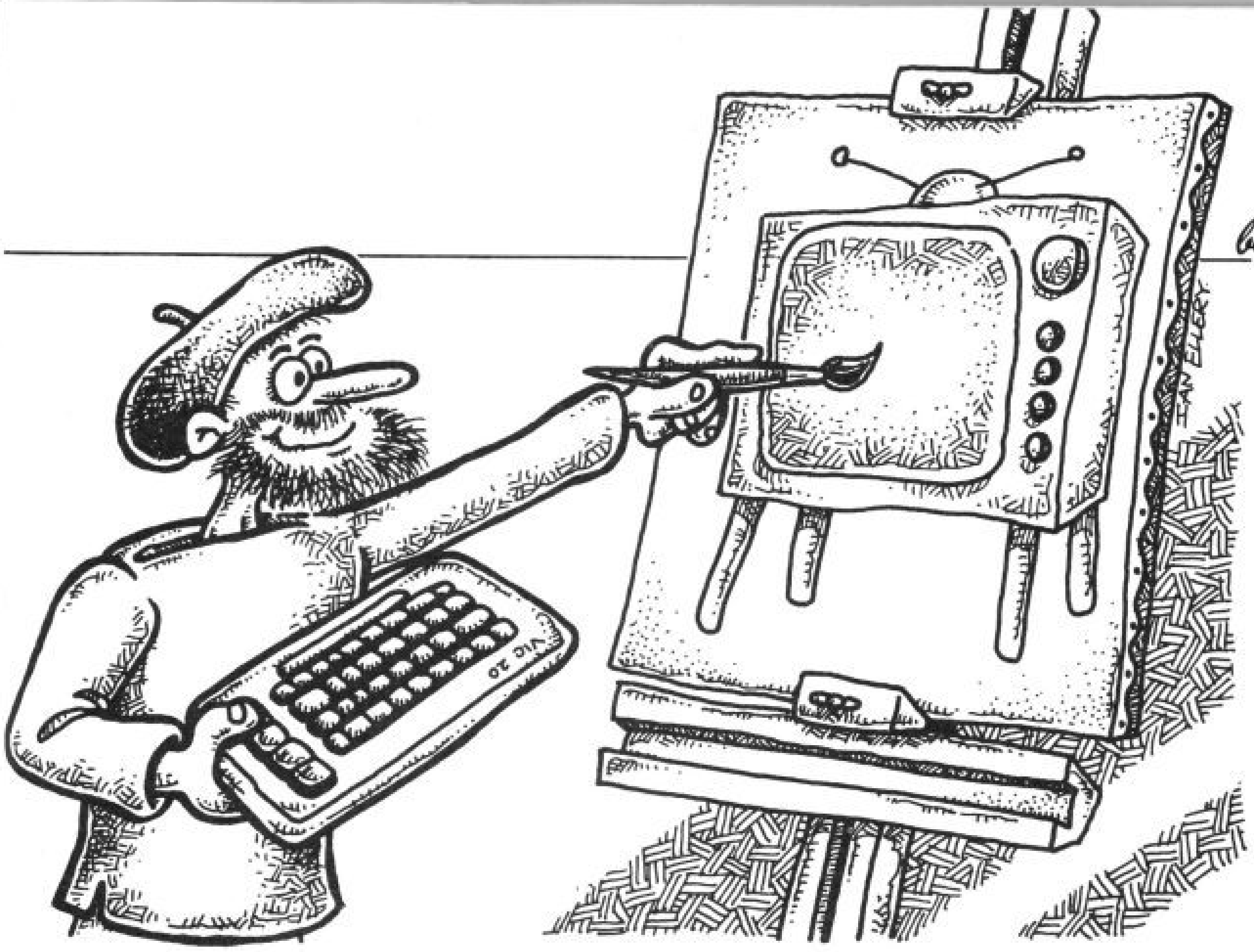
This program is intended to be used as an aid to creating user defined graphics. By using the commands detailed in **Fig 1** you can build up an 8 times full size copy of your required character, while at the same time a normal size version is being displayed at the right-hand side of the screen. The building up of the character takes place in a 16 × 16 work area which allows 4 characters to be constructed in a 2 × 2 block to allow larger units to be built up.

The screen can be cleared to either spaces by 'C' command or reverse spaces by 'B', i.e. completely black, and then individual blocks can be removed or inserted by 'I' or 'O' commands. If at any time you wish to reverse the character this can also be accomplished by entering 'X'.

At all times the possible option keys are displayed at the bottom of the screen.

When you are satisfied with the character, pressing 'P' will cause the four sets of eight values which represent the character(s) in the character generator to be printed. From this point the available options are listed in **Fig 2**.

If you already have a set of values and wish to observe or alter the character which they produce, then pressing 'N' allows you to enter them and the character will be displayed on the screen. For this purpose the four character positions are



by M D MacDonald

numbered as in **Fig 3** and the sets of values should be entered in that order. If you do not wish to enter values for any of the four characters then entering a 'Z' instead of the first value will zero-fill that character. A few sets of values are given to demonstrate this option and can be altered by the other facilities of the program.

U	Cursor Up.
D	Cursor Down.
L	Cursor Left.
R	Cursor Right.
I	Fill in Cursor Location.
O	Clear Cursor Location.
C	Clear Work Screen.
B	Set Work Screen To Reverse Blanks.
P	Print Values of Created Characters.
N	Allow entry of Numeric Data.
X	Reverse Print Characters.
E	End Program.

Fig 1. First screen options.

R	Return to First Screen With Present Characters.
C	Return to First Screen With Screen Cleared.
E	End Program.

Fig 2. Second screen options.

1	3
2	4

Fig 3. Positions for each of the four characters.

EXAMPLE 1. PHOENIX

Char1	1,243,120, 60, 31, 15, 7, 1
Char2	3, 3, 3, 5, 5, 10, 0, 0
Char3	128,143,158,188,248,240,224,192
Char4	224,224,224,208,208,168, 0, 0

EXAMPLE 2. RACEHORSES

Char1	4, 9, 27,222, 62, 34, 85,136
Char2	0, 0, 0, 3, 0, 0, 1, 2
Char3	0, 0,128, 0, 0, 0, 0,128
Char4	16, 36,110,120,248,136, 84, 34

EXAMPLE 3. RACING CAR

Char1	219,219,255,231,231,231, 60, 60
Char2	60, 24, 24,219,255,255,219, 60
Char3	Z
Char4	Z

```
610 FORA=0TO15
620 B=PEEK(7448+A):C=PEEK(7464+A)
630 PRINTB,C:IFA=7THENPRINT
640 NEXTA
650 PRINT"[2CD]R,C,E"
660 GETA$:IFA$=""THEN660
670 IFA$="E"THEN810
680 IFA$="C"THEN90
690 IFA$="R"THENRR=1:GOTO110
700 GOTO660
710 FORXX=0TO1
720 FORYY=0TO15
730 CC=PEEK(7448+XX*16+YY)
740 CT=256
750 FORZZ=7TO0STEP-1
760 LC=7710-ZZ+XX*8+YY*22
770 CT=CT/2:IFCC=>CTTHENCC=CC-CT:POKELC,39:POKELC+SC,0
780 NEXTZZ:NEXTYY:NEXTXX
790 RR=0
800 GOTO200
810 PRINT"[CLS][2CD]BYE":END
820 YY=0
830 PRINT"[CLS]ENTER VALUES FOR","CHARACTER";YY+1;"[2CD]"
840 XX=0
850 PRINT"LINE";XX+1;:INPUTA$:IFXX=0ANDA$="Z"THEN910
860 A=VAL(A$):IFA>255THENPRINT"WRONG-ENTER AGAIN:GOTO850
870 POKE7448+XX+YY*8,A
880 XX=XX+1:IFXX<8THEN850
890 YY=YY+1:IFYY<4THEN830
900 RR=1:GOTO110
910 FORXX=0TO7:POKE7448+XX+YY*8,0:NEXTXX
920 GOTO890
930 FORXX=0TO15
940 FORYY=0TO15:LC=SS+XX+YY*22:ZZ=0
950 IFPEEK(LC)=32THENPOKELC,39:ZZ=1
960 IFPEEK(LC)=39ANDZZ=0THENPOKELC,32
970 NEXTYY:NEXTXX
980 FORLC=7448TO7479:POKELC,255-PEEK(LC):NEXTLC
990 GOTO240
1000 DATA 255,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1
1010 DATA 128,128,128,128,128,128,128,128,0,0,0,0,0,0,0,255
1030 DATA 255,1,1,1,1,1,1,1,128,128,128,128,128,128,128,255
```

ILLUSTRATION: IAN ELLERY

VICTUALS

2-D SPIRAL — COMMODORE 64

by Neil Phillips

We didn't know quite what to make of this program. It's one of those mind-bogglers that don't seem to have any practical use! However, we feel sure that our inventive readership will think of something. And if you can't it's sure to amuse you.

What does it do? Whenever you press a key, it prints that character in a spiral pattern on the screen . . .

```
1 REM  NEIL PHILLIPS
2 REM    10/20/83
3 REM   2-D SPIRALS
5 PRINT"[CLS]"
6 PRINT"[HOM]";:GETA$:IFA$=""THEN6
8 IFA$=CHR$(141)THENPRINT"[CLS][2CD][3CR][RED]BYE![3CD][BLU]":CLR:END
10 PRINTTAB(10)"[11CD]";A$;A$;"[2CL][CD]";A$;
11 FORX=1TO9
20 FORM=1TO2*X:PRINTA$;:NEXT
30 FORN=1TO2*X:PRINT"[CL][CU]";A$;:NEXT
40 FORV=1TO2*X+1:PRINT"[2CL]";A$;:NEXT
49 IFX=9THENFORT=1TO2*X:PRINT"[CL][CD]";A$;:NEXT:GOTO6
50 FORT=1TO2*X+1:PRINT"[CL][CD]";A$;:NEXT
60 NEXT
98
99 REM TYPE IN A
                    SHIFTED <RETURN>          TO END.
```

DATA STATEMENT GENERATOR AND VERIFIER — VIC-20

by C Walls

It is often necessary to include large quantities of data in Basic programs by using DATA statements. One of the most common examples being machine code programs presented in magazines.

The five-line program in **Figure 1** provides a solution to this problem. It prompts for the DATA statement line number and then accepts up to 100 data items. Just Return causes it to PRINT the DATA statement, Return it and RUN itself again. To terminate the sequence, respond with a negative line number or RUN-STOP/RESTORE.

Here's how the program runs:

Line 0 — sets up storage for the data items

Line 1 — accepts DATA statement line number (over-writing the READY message)

Line 2 — accepts each data item

Line 3 — PRINTs resulting DATA statement and RUN command

Line 4 — loads keyboard buffer with 4 CURSOR-UPs and 2 RETURNs (RETURNing the DATA statement and RUN command to Basic).

The program may easily be renumbered, since it contains no internal line references and being only 5 lines, is easily deleted.

The three-line program in **Figure 2** gives a meaning of verifying the resulting DATA statements, displaying one for each key entry. When the end is reached it crashes with "?OUT OF DATA".

FIGURE 1

```
0 DIMDA$(99)
1 INPUT"[CD]DATA STATEMENT";DS:IFDS<OTHENEND
2 FORCN=0TO99:INPUTDA$(CN):IFDA$(CN)<>""THENNEXT
3 PRINTDS;"DATA";:FORI=0TO(CN-2):PRINTDA$(I);",";:
  NEXT:PRINTDA$(CN-1):PRINT"RUN"
4 POKE631,145:POKE632,145:POKE633,145:POKE634,145:
  POKE635,13:POKE636,13:POKE198, 6
```

FIGURE 2

```
0 READK$:PRINTK$
1 GETK$:IFK$=""THEN1
2 GOTO0
```

DELETE COMMODORE 64

by Fred Reid

Have you ever had to delete part of a large program the hard way by typing in the line numbers and pressing Return? This machine code program could save you lots of trouble.

If the part you want to keep will fit on to the screen, all you have to do is LIST it, type NEW, and then type Return over the lines you want. However, if you can't fit everything on to the screen, you will lose whatever isn't displayed when you type NEW.

Delete works in the same way as NEW, modifying the line pointers in memory so that the computer doesn't know those lines are there, but you can delete a range of lines, leaving all lines outside that range.

For example: to delete lines 100 to 350, type **SYS49243, 100-350**, but the range parameters follow the same format as for the LIST command, for example **100—** will delete from line 100 to the end of the program, while **—100** will delete every line up to 100. Warning! Be careful how you use *Delete*, could delete the wrong lines.

```
1 REM** DELETE **
2 REM
3 REM** BY FRED REID **
4 REM
5 REM** (C) 1984 **
6 REM
7 REM** USE "SYS49243.L1-L2" **
8 REM
9 REM
50 FORI=0TO165:READA:POKEI+49243,A:NEXT
100 DATA32,191,192,165,95,166,96
110 DATA133,251,134,252,32,19,166
120 DATA165,95,166,96,144,10,160
130 DATA1,177,95,240,4,170,136
140 DATA177,95,133,122,134,123,165
150 DATA251,56,229,122,170,165,252
160 DATA229,123,168,176,30,138,24
170 DATA101,45,133,45,152,101,46
180 DATA133,46,160,0,177,122,145
190 DATA251,200,208,249,230,123,230
200 DATA252,165,46,197,252,176,239
210 DATA32,51,165,165,34,166,35
220 DATA24,105,2,133,45,144,1
230 DATA232,134,46,32,89,166,76
240 DATA116,164,32,253,174,32,121
250 DATA0,144,22,240,14,201,171
260 DATA208,10,169,1,133,95,169
270 DATA8,133,96,208,21,76,8
280 DATA175,234,234,234,32,107,169
290 DATA32,19,166,32,121,0,240
300 DATA12,201,171,208,235,32,115
310 DATA0,32,107,169,208,227,165
320 DATA20,5,21,208,6,169,255
330 DATA133,20,133,21,96
```

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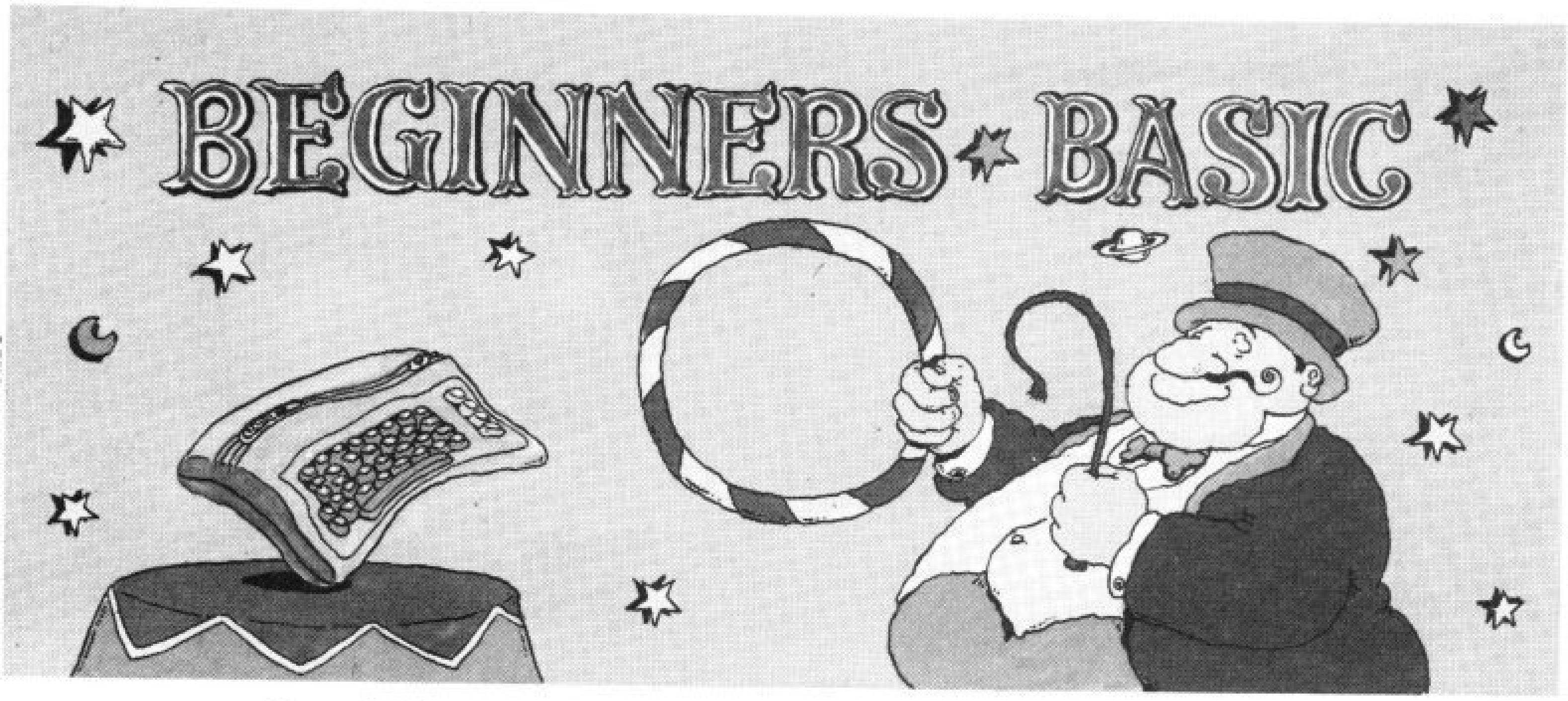
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ILLUSTRATIONS: DAVID SUMONDS

Part 2 — variables, loops and arrays

By Brian Grainger

Now that you've all recovered from last month's gentle introduction, it's time to delve a little further into the mysteries of Basic. What are those mysterious things called variables, loops and arrays that the boffins talk so much about? Read on and find out.

Hello again. How did you get on with the exercise I set last month? The aim was to write a program which would ask for the user's name and print a smiling face and welcoming message. Obviously, there is more than one way of doing this and here is the way I chose to do it. Perhaps you experimented and used different graphic characters to make up the face or used a dash of colour to make it more interesting. If not, why not play around with my solution. Now to more serious stuff.

Variables

You will notice in my program that I have used the 'box', **NA$**, again. Last time I said that NA$ is used as a label for the 'box' and in my program the 'box' would hold the name of the user. The technical name for this box is a **VARIABLE**. That is because the value of the variable (or contents of the 'box' if you like) can be changed.

When you say:

PRINT "BRIAN";

the program will always print BRIAN. "BRIAN" is a **CONSTANT** value. But when you say:

PRINT NA$

the program will print whatever the value of **NA$** is at the time you ask to print it.

[CLR] =	CLEAR	┘ =	CBM KEY + X
[DOWN] =	CURSOR DOWN	| =	CMB KEY + N
[RIGHT] =	CURSOR RIGHT	─ =	SHIFT + C
┌ =	CBM KEY + A	(=	SHIFT + B
┐ =	CBM KEY + S	╰ =	SHIFT + J
└ =	CBM KEY + Z	╯ =	SHIFT + K

```
5 INPUT"WHAT IS YOUR NAME";NA$
7 PRINT"[CLR][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN]"
10 PRINT"[RIGHT x16]┌──────────┐"
20 PRINT"[RIGHT x16]|          |"
30 PRINT"[RIGHT x16]|  ┌┐  ┌┐  |"
40 PRINT"[RIGHT x16]|  └┘  └┘  |"
50 PRINT"[RIGHT x16]|    |     |"
60 PRINT"[RIGHT x16]|    |     |"
70 PRINT"[RIGHT x16]|          |"
80 PRINT"[RIGHT x16]|  ╰────╯  |"
90 PRINT"[RIGHT x16]└──────────┘"
95 PRINT
100 PRINT"[RIGHT x16]HELLO ";NA$
```

Types of Variables

In all the examples so far we have only used variables which hold strings of characters. These are not surprisingly called **string variables**. You may be asking yourself how can you do *arithmetic* in a program. The answer is that there are other types of variables that instead of holding strings of characters can hold numbers.

The first type of variable that holds numbers is one that includes only whole numbers (without any decimal places) such as 1, 5, 7, −126. Here is an example of how we would set such a variable to the value 10:

1%=10

We call **1%** an **integer variable** because it can only hold whole numbers. If you try to set it to a decimal number it will replace it with the nearest whole number *less* than or *equal* to the decimal number you have given. So **1%=2.7** will set **1%** to **2** and **1%=−2.7** will set **1%** to **−3**.

We will certainly want to hold decimal numbers in our programs so there is a third type of variable which the technically minded call a **floating point variable**. In the line below such a variable will be set to the value of 1.37:

FP=1.7

So now we know that the 'boxes' we call variables can hold different types of values such as string variables, integar variables and floating point variables. Phew.

Naming your Variables

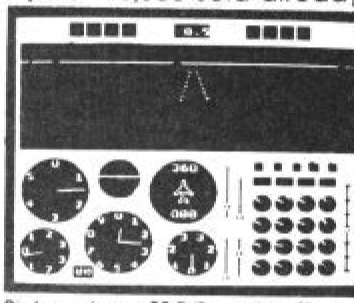
Just as we have rules for identifying houses to help the postman, we have rules for naming variables to help Commodore Basic. Floating point variable names can be any set of alphabetic or numeric characters but the first one must be an alphabetic character. Examples of valid names are: **DATE**, **DAY**, **I**, **B52**. Example of names which are not allowed are: **52B**, **DATE:DAY**.

However many characters are in the name, Basic will ignore any following the first two. So Basic regards **DATE** and **DAY** as the same variable because the first two characters of each are identical. For this reason variable names in Basic programs are usually not longer than two characters.

Integer variable names have exactly the same rules, but the name *must* be followed by '%' sign. **1%**, **B6%** are valid names for integer

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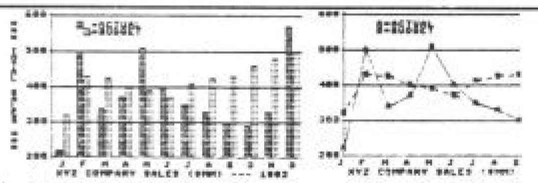
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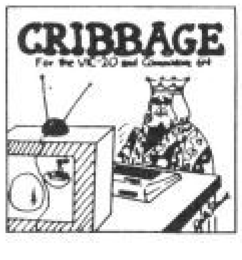


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'NA$ is used as a label for the box and . . . the box would hold the name of the user'

variables.

Finally, string variable names follow the same rules but the name *must* be followed by a '**$**' sign like the example **NA$** in our program.

If you try to give a numeric variable a character string value you will cause an error. A string variable cannot be given a numeric value either. So, **N$ = 123** is incorrect, although **N$ = "123"** is alright because "123" is a string of characters rather than a number.

Introducing the Array

Now it's time to introduce a rather special type of variable called an **Array**. If everybody gave their house an individual name the job of the postman would be very difficult. To make life easier we group houses into streets which have names and then each individual house in the street has a different number.

It is sometimes very convenient to do the same with variables. The equivalent of a street of variables is an **Array** and we name it just as before including a '%' or '$' as necessary. To refer to each individual variable of an array we give it a number *in brackets* following the array name. For example **A(1)**, **A(2)**, **A(3)** are three individual variables, each of which can hold a different value, in the array called **A. A(N)** would also be a variable of the array if **N** had been set a number value beforehand.

The following little program:

```
10 A(1) = 5
20 N = 1
30 PRINT A(N)
```

will print the value of A(1) which has been set to 5.

Array dimensions

If you want to refer to more than 10 variables in the array then you must tell Basic to reserve space for the number of variables you want to use. We do this with a **DIM** command which gives Basic the 'dimension' or length of the array. We can only dimension an array *once* within a program so we must be sure to give the highest value we will need. In the example above if we wanted to set and print **A(50)** but nothing higher than the 50th variable of the array we would add an extra 1 line (5) so making the complete program:

```
5 DIM A(50)
10 A(50) =46
20 N=50
30 PRINT A(N)
```

Try the above without line 5 first and see what happens.

Ready-made Variables

Basic itself automatically sets up two variables which you can use in your programs. The first of these is the string variable **TI$** which gives the number of hours, minutes and seconds at any given time.

For example, if **PRINT TI$** results in 013558 being printed it means that the clock inside your computer is reading 1 hour, 35 minutes and 58 seconds.

When the machine is turned on or reset, the clock will be set at 000000 and will count upwards in 24 hour clock fashion. By giving **TI$** a value in your programs you can reset the clock to any particular time.

The second variable Basic sets up is a number variable named **TI** and it is the value of **TI$** expressed in 'jiffies". There are 60 jiffies in a second so you can see that your computer has a very accurate clock inside it and you can measure very small times. We shall see an example of this later. But let's take a break from variables for the moment.

Looping the loop

In the first part of this series I said that a program was a set of instructions performed in sequence, unless the answer to a question causes a jump to another part of the sequence. In all the examples so far we have not seen any jumping out of sequence. Time for some examples. We'll use the knowledge we've gained of the special variable to demonstrate the various types of loop structures in programs.

The simplest form of loop is one that goes round and round for ever. Here's a simple example which displays the computer time at the top of the screen:

```
10 PRINT" (HOM) (6SPC) (HOM)"; TI$
20 GOTO 10
```

You'll have noticed that we used a new command, **GOTO**. This causes the program to jump to the line number given after the word GOTO. In the example the effect will be to continually execute lines 10, 20, 10, 10, 20.

So you can see this type of loop is not very useful as once started you cannot do any more. When you have typed in the example and run it you will have to press the STOP key to stop the program.

More useful Loops

Let's look at one type of loop which we can control, the **REPEAT - UNTIL** loop. Suppose we wish to measure the numbers of seconds between a given start point and when a key is pressed and then display the result. The steps in our program might be:

1) Print a starting message and note the time it was printed.
2) **REPEAT** checking to see if a key is pressed **UNTIL** a key is pressed.
3) When the key is pressed note the time.
4) Print the time difference in seconds.

Let's use the special variable **TI** to measure the time. The following program is the Basic equivalent of the steps above. Remember to type NEW before entering the program into your computer.

```
200 PRINT" (CLS) PLEASE PRESS A KEY WHEN YOU THINK TEN (3SPC) SECONDS HAVE PASSED"
210 T=TI
220 GET A$
230 IF A$= " " THEN 220
240 S=TI
250 PRINT" (CD) YOU PRESSED THE KEY AFTER"; (S-T)/60;" SECONDS"
```

Complicated? Not really, we've just used a few new features. Line 200 prints the starting message and line 210 takes a note of the time by storing the start value of the special variable **TI** in a new variable, **T**. The '=' sign in this line means put the value of the expression on the right into the variable given by the name on the left.

In Line 220 we see a new command, **GET**. This checks to see if a key is pressed and stores the character value in the string variable **A$**. If no key is pressed then a value of nothing, denoted by " " is stored in **A$**.

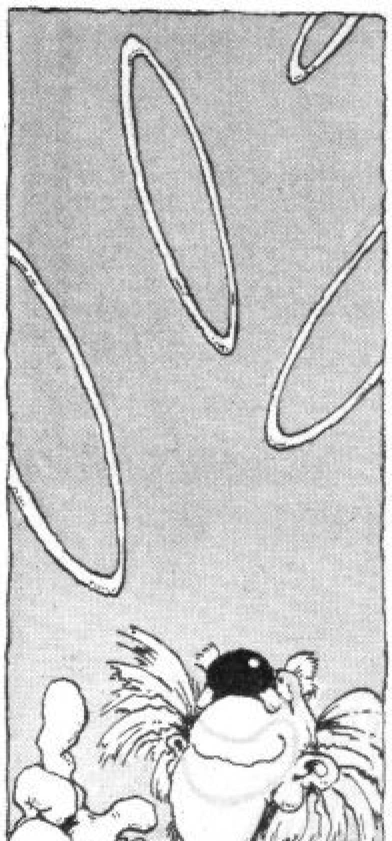
Line 230 is the line which implements the REPEAT . . . UNTIL step. It uses two new commands **IF** and **THEN**. This works by looking at the expression after the **IF** command, in this case **A$**=" ". If the expression is true the program will do whatever follows the **THEN** command, in this case jump to line 220. If the expression is false then the program carries on from the next line and the statement after the **THEN** command is ignored. **A$** will be equal to " " while a key isn't pressed so the program will repeat the

loop until a key IS pressed, when **A$=" "** is false.

Line 240 makes a note of the new time and line 250 prints a message which indicates the time passed in seconds. There are 60 jiffies in a second so we divide the time difference by 60.

FOR . . . NEXT and STEP

Another type of loop is needed when we want to carry out a number of statements over and over again where a variable takes on a different value each time the statements are repeated. If the values are in sequence and the difference between one value and the next is always the same we can use a **FOR . . . NEXT** loop. Let's suppose we want to display our tables, such as the 3 times table or the 12 times table.



'the simplest form of loop is one that goes round and round forever'

Here are the steps you need to take in the program:

1) Ask the user which table he wishes to see and store that number, in N say.
2) FOR each value of 1 from 1 to 12 with a STEP of 1 between each to calculate the value of 1 multiplied by N, and print a line of the N times table.
3) Print a heading for the table.

We can translate the above steps into the following program:

```
10 PRINT" (CLS) WHICH TABLE DO YOU WANT."
20 INPUT" GIVE A NUMBER BETWEEN 2 AND 12"; N
30 PRINT : PRINT : PRINT
40 FOR I=1 TO 12 STEP 1
50 R=I*N
60 PRINT I; "TIMES"; N; "=";R
70 NEXT I
80 PRINT
90 PRINT "THE"; N;" TIMES TABLE"
```

Let me highlight the new ideas. Line 30 is slightly different. We have three statements on one line. In this case each statement is the same, PRINT a blank line, but they could be different. We can put as many statements on a line as we wish provided the total line length is no more than 80 characters. Each statement must be separated by a ':'.

Line 40 introduces the start of the loop by saying set I to a start value of 1, step the value by 1 each time and repeat the instructions between this statement and the NEXT statement until I is *greater* than 12. The effect will be to repeat lines 50, 60 with values of 1 of 1,2,3, . . . 12. When the step value is 1, as in this case, we need not add the STEP 1 command. The Basic will assume a step value of 1 unless another value is given. The only other point to note is that in line 50 a '*' is used. This is the Basic character for the multiply sign (X).

Random numbers (RND)

As well as special variables, Basic has some built in functions that you can use in your programs. One such function is to generate a random decimal number between 0 and 1. A random number is one that is equally likely to be any of the values in the range 0-1 (but NOT 1 itself). This can be used like dice.

To generate a random number and store it in the variable 'I' we would say: **I=RND(1)**. The number 1 in brackets can be changed but the reason for doing so is beyond the scope of this series so well stick with 1 for the present. To generate a random whole number in a given range we would have to use an expression using the **RND** function. The following' gives a whole number in the range 5 to 15. **I=5+INT (RND(1)*(15−5+1))**

We have used another Basic function, **INT**, in the above. This takes a decimal number and turns it into the nearest whole number less than or equal to the decimal number. You've guessed, it stands for 'integer'. Now for a little fun.

```
100 PRINT "(CLS) THIS GAME WILL TEST YOUR SPEED OF"
110 PRINT "REACTION. YOU WILL BE GIVEN A TIME IN"
120 PRINT "THE RANGE OF 5 TO 15 SECONDS. YOUR TASK"
130 PRINT "IS TO PRESS A KEY WHEN YOU THINK THAT"
140 PRINT "AMOUNT OF TIME HAS PASSED SINCE MESSAGE"
150 PRINT "WAS GIVEN TO YOU. THIS TEST WILL BE"
160 PRINT "REPEATED 5 TIMES. A SUMMARY OF RESULTS"
170 PRINT "WILL BE DISPLAYED AT THE END."
180 PRINT
190 PRINT "PRESS A KEY WHEN YOU ARE READY TO START"
200 GET A$
210 IF A$=" " THEN 200
220 DIM T(5), G(5)
230 FOR NG=1 TO 5
240 T(NG)=5+INT(RND(1)*(15-5+1))
250 PRINT "(CLS) HIT A KEY IN";T(NG);"SECONDS"
260 S=TI
270 GET A$
280 IF A$=" " THEN 270
290 E=TI
300 G(NG)=(E-S)/60
310 PRINT "(CD) GET READY FOR NEXT GO"
320 FOR I=1 TO 2000 : NEXT I
330 NEXT NG
340 PRINT "(CLS) HERE IS A RESULTS SUMMARY"
350 PRINT
360 PRINT "GAME","TIME","REACTION TIME"
370 FOR I=1 TO 5
380 PRINT I,T(I),G(I)
390 NEXT I
400 PRINT
410 PRINT "THANK YOU FOR PLAYING"
```

Play Time

Now let's put all the ideas introduced this time all together. Above is a simple game to test your reactions. You have five goes to try and guess a time interval that the computer will randomly choose. At the end the computer will print a summary of the results. See if you can understand how the program works and note in particular the use of array variable to make the program shorter.

The exercise for you to look at this time is to write a program to simulate the flipping of a coin and show that the number of heads will roughly equal the number of tails if the number of flips is large enough. As a guide here are some steps to follow:

1) Ask the user how many times to flip.
2) Set up an array where the first element holds the number of heads and the second the number of tails.
3) For each flip carry out the following steps:
   3.1 — Choose a random integar betwen 1 and 2 (head or tail).
   3.2 — Add 1 to the appropriate array element.
4) Print the results.

Don't work too hard — see you next month when I'll take you further down the road of Basic programming.

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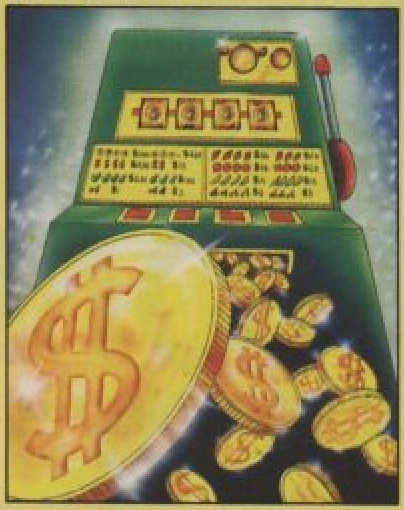


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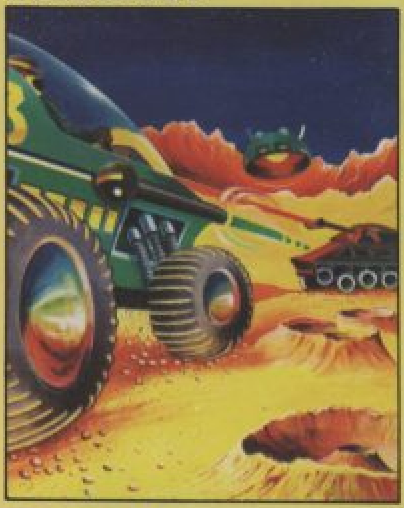
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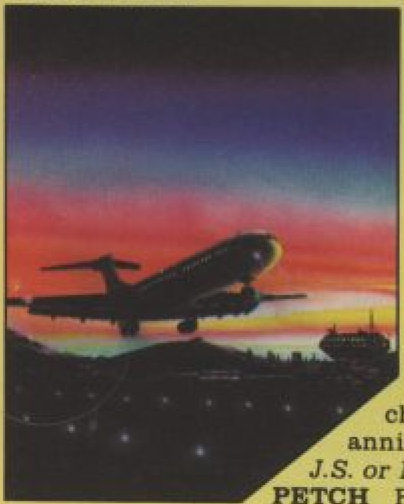
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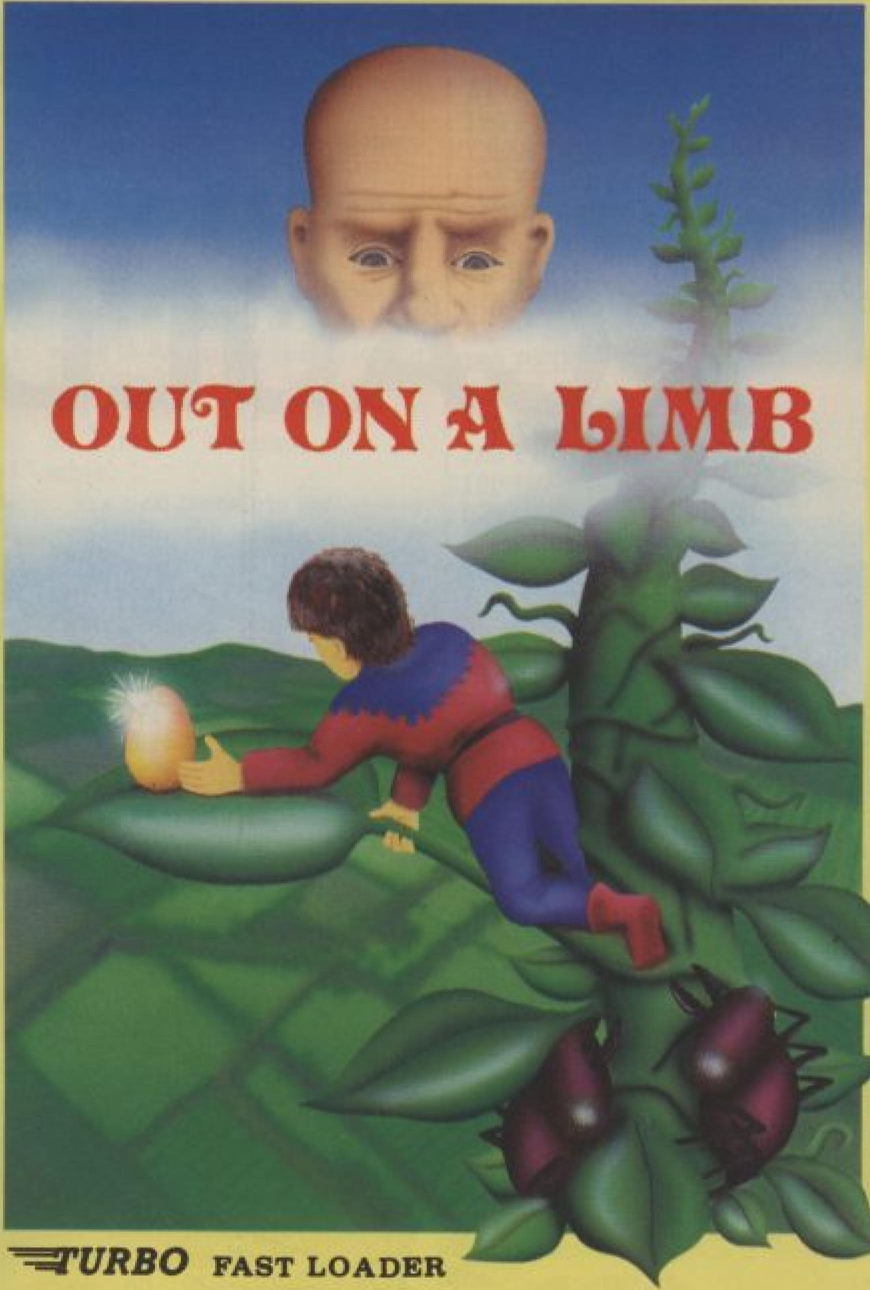


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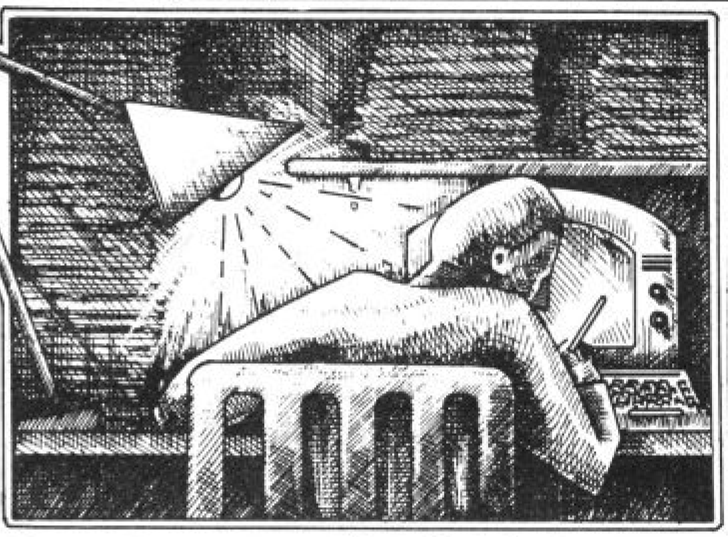
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TOMMY'S TIPS

Tommy is Commodore User's resident know-all. Each month he burrows through a mountain of readers' mail and emerges with a handful of choice queries. The result, before you, is a wadge of priceless information and indispensable advice. There's even the odd useful tip as well.



Dear Tommy, **I am about to start writing a program for the Commodore 64, whose execution time I expect to be quite lengthy.**

I hoped to shorten the run-time by using machine code instead of Basic, but, having just spent a week ploughing through a stack of books and manuals, I fear the task is far beyond me. Are there, therefore, any software packages that will take a program written entirely in Basic and rewrite them line by line into machine code?

What you need is a compiler. While a true compiler will indeed produce machine-code they tend to be rather expensive; what you get for micros are pseudo-compilers. These convert Basic to an intermediate code which is much more efficient than Basic; this code is then interpreted. The resulting program does run faster although nothing like as fast as a pure machine-code program. There are at least two compilers available for the 64: **Petspeed** from *Oxford Computer Systems* and **DTL-Basic 64 'Jetpack'** from *Dataview*. The increases claimed in the adverts are unlikely to be achieved in practice, but geniune speed gains of up to 10 times are not to be sneezed at. Prices are £15 for DTL-Basic (cassette version), £40 (disk version) and £50 for Petspeed (disk).

Dear Tommy, **Please help! I am at my wit's end. I do not own a disk drive so I cannot solve the following program.**

Recently I have written a program which looks like this: 10 SYS 849. I have tried to store the machine code from location 849 to 1020, but every time I load the program back in, the machine code is overwritten by the tape buffer. Please would you tell me how to save the program so that the machine code stays in the tape buffer when the program is reloaded. I have tried for weeks to solve this problem without any luck. I would be very grateful if you could help me.

There is no way you can store a machine-code program in the tape buffer *if you want to use the tape recorder again!* Anything stored there will be overwritten as soon as you try to load, as you have discovered. You can try it the other way round, which is to load the Basic program first, which must include code to load the machine-code program. This way the machine-code will not be disturbed again after it has been put in the tape buffer. The **SYS** command must follow the **LOAD** command and will then activate the machine-code program in the normal way. The alternative is to store the machine-code at the top of memory; the Basic program can then be loaded and run as normal and provided you are not storing strings etc., does not need to alter any memory pointers.

Dear Tommy, **I have a Vic-20 and I am having a problem with a Poke command. When I type in a program with the Poke number 36869,255 (as in Horse Race line 500 of your magazine *Commodore User* Dec. 84) the screen fills with lots of different characters and the program will not run. When I change the number to 36879,255 it will run. This also happens in other programs. Is there a problem with my Vic?**

I also have a problem with a program I have typed in, it's called 'Three in a Row' (based on noughts and crosses). Can you tell me how to get the word 'Win' to flash on the screen when a winning line is made? I have used the Poke command to get the frame on the screen, and use the Get statement for the keys, e.g. key 'A' will put 'X' in square A1, and key 'B' will put '0' in square A1.

Having looked at the program in question, there is nothing wrong with the original line 500. Address 36869 sets part of the video address (bits 4-7) and the start of the character memory (bits 0-3). Horse Races changes the character set to give the neat little horses, hence if you alter this line you will not be able to see the User Defined Graphics characters. I know it might sound a silly question, but you have removed all additional memory haven't you? This program (and others like it) will only work on the unexpanded or +3K Vic. If you have an 8K or 16K RAM pack plugged in you will get the peculiar results you mention. If this is not the case then I suggest you check the lines 5-75 again *very carefully* as these lines set up the alternative character location. Also ensure you haven't mixed up 1 and I; this being a common error.

On your second query, the following code will do what you want:

```
1000 FOR LOOP=1 TO 10
1020 PRINT"WIN<CUL3>";
1030 FOR DL=1 TO 500:
     NEXT DL
1040 PRINT"<spc3><CUL3>";
1050 FOR DL=1 TO 500:
     NEXT DL
1060 NEXT LOOP:PRINT
```

Note that <CUL3> is 3 cursor left keys and <spc3> is 3 spaces. Changing the values in lines 1030 and 1040 will alter the flash rate; altering the loop value will alter the number of times it flashes.

Dear Tommy, **In the December issue of *Commodore User* in reply to a query concerning the 1520 printer-plotter, you state that as the 1520 is set up as Device 6 it is therefore of no use for using with a word processor. But in the same issue a review by Chris Durham on the 1520 gives a method of inserting a link which will convert it to Device 4.**

Could you please advise if after inserting the link the 1520 could be used for a word processor such as Vic-Writer. Thank you.

If you change the Device Number of the 1520 as explained in Chris Durham's article then you *will* be able to use it with most WP programs. The snag is that you will not be able to alter the print size, pen colour or other options because Vic-Writer can only send control codes that printers like the 1525 can recognise; the 1520 needs different types of commands to change its options. You are therefore limited to whatever is set on the 1520 before you load and run your WP program (i.e. if you want 80 columns then you must set the 1520 for 80 columns before loading your WP program).

Dear Tommy, **A nice easy problem for you! I have decided to buy a disk drive for my Commodore 64 and would like to know which one to buy. I'll tell you what I know about Commodore drives.**
1540 — too fast for 64
1541 — very slow
1542 — is this the new one for the 16 and Plus 4 and is it compatible with the 64?
Double drives — do they require an interface?

To begin with the drive will only be for my own programs but eventually I would hope to help run a business with my computer. Could you tell me what drive is best and why and also the reasons against the others?

Ah, a little history and some prophecy all in one query, eh? The history is that the 1540 is dead; long live the 1541. The 1540 was for the Vic-20 only. The 1541 replaced it to work with both the Vic and the 64. The 1542 is intended for use with the Plus-4 and 16, but is not yet available. I hear it will be compatible with the 64,

TOMMY'S TIPS

but knowing Commodore I won't take bets. As for dual drives, the Commodore 4040 would be the thing to go for if you could get one, as it is fully read compatible with the 1541, but they don't make them any more! However, there are still some available on the second-hand market at around £350 and you will need a £45-£60 interface plus a £35 cable in order to use it.

So what's best? The 1541 is the obvious choice because it is cheap (inexpensive anyway!), does not require an interface or expensive cables and will run all the commercial programs on disk for the 64. Its disadvantages are that it is slow, occasionally unreliable and you cannot run two single drives together for longer than about 12 minutes before they hang up. If you are intending to use them for business later on, my reaction would be to go for a dual drive, but the only dual drive currently available from Commodore is the 8250; a 2Mbyte dual sided, dual density drive that is not read compatible with 1541 disks. The result is that much of the available software will be denied to you, unless the suppliers will reformat the programs onto an 8250 disk. As for personal recommendation, I have just changed from two 1541 drives to a dual 4040 using INTERPOD. I had been on the lookout for a good one for 6 months though, so you may or may not be lucky.

One final point: apart from the 8250 the data storage on Commodore disks is not large — 170K each. Unless your business use is going to be fairly small you might be better off buying a new business system complete and just getting a 1541 for use at home.

***Dear Tommy*, Is there any way of expanding the screen on my Vic-20 to 40 columns without spending a lot of money on an expansion board? There must be a cheaper alternative.**

I've had quite a lot of queries from people wanting to expand the Vic 20 screen to 40 columns using software. I would like to thank Theodor Schmidt of Dorset for drawing my attention to a program called Super Screen from Audiogenic. It costs £9.95, needs at least 8K expansion RAM and will *not* work with any cartridge that uses the 'Hex' C000 memory area. You cannot Poke to the screen either, but apart from that it does allow you to get 40 columns in your own programs.

***Dear Tommy*, I wonder if you can help me. The cost of an 80 column card appears to be exceptionally high, a third or more of the cost of a Commodore 64 computer.**

Is it possible to achieve 80 columns by means of software? If so, can I purchase such a program, alternatively can you provide any guidelines as to how I might write a suitable program. As I am an absolute novice the most useful advice would be to list a suitable textbook.

I regret that I have not been able to find any company producing such a program (if any company *is* marketing such a product, please let us know!). One of the problems you face is that no TV set will display 80 columns; nor will the Commodore Colour Monitor do it clearly. You need a monochrome monitor. If you are a complete novice I would hesitate to recommend that you tackle anything quite as complex as this since it will involve a good working knowledge of both machine code and the 64's operating system. Not only that, but unless you are very clever indeed no commercial software will run on your 64 with 80-columns as it will probably not be compatible. Even the hardware boards can normally only work with software written specifically for them (unless only PRINT statements are used). If you really cannot manage without 80 columns then I am afraid that a hardware solution is the only real answer — or buy another computer.

***Dear Tommy*, Help required please. Being new to computing, I need to know where my Commodore 64 stores certain information. I have a file program (*Unifile* from a book called The Working Commodore 64) with this I have kept records of my music collection. The data saved takes 20 minutes. I have a program (from *Compute* magazine) that will save and load data at 10× speed, but I need to know the starting and end addresses of this information. Where can I find them? Thanks.**

First of all, are you sure that the two programs will work together?

TOMMY'S TIPS

I assume that the latter program is a machine-code routine which is loaded before running the *Unifile* program and is run using a 'SYS' command. I also assume that the data is stored in an array (arrays?) in which case addresses 47 & 48 will point to the start of the data area and addresses 49 & 50 will point to the end (e.g. **PEEK (48)*256 + PEEK (47)** will give you the address of the start of the Basic arrays). If the data is likely to include single variables as well then to be safe you should save the variables area too, the start of which is pointed to by addresses 45 & 46.

Although saving would be possible after exiting from *Unifile*, loading should really be done from within the program. Your best bet is to alter *Unifile* so that it will load the *Compute* machine-code program into memory and also add the necessary code to invoke the relevant SYS calls. This way you will retain a completely integrated program.

Dear Tommy, **I have a problem with my Commodore 64 which I hope you could help with. In the August issue, page 22, David Bolton reviewed the book 'Sprite Graphics for the Commodore 64'. In his review he talks about 'sparkle'. My Commodore 64 has this problem. Could you please tell me how I can get rid of this 'sparkle'. Thank you very much.**

As far as I can discover there is no way of getting rid of it. It only seems to affect the older 64s; newer ones seem to have had the problem sorted out by Commodore. I had the problem with my previous 64 to a certain extent and reduced it, but didn't clear it completely, by fine tuning the video modulator. You must bear in mind though that this only reduces the effect on the screen; other effects such as the one mentioned in the review can still occur. (If any reader *is* aware of a way of completely overcoming it, please let us know.)

Dear Tommy, **I have had my Vic-20 for almost two years and have enjoyed using it to date. However, in the last few months the wires in the video plug of the RF modulator have become very loose and this affects the picture and sound. As the guarantee has expired, please could you tell me if Commodore supply spare parts, and an address to write to.**

If it is just a question of the wires coming loose in the plug then any TV/radio repair shop will be able to fix it for you. If the cable is damaged then you could get them to fit a new cable which will be much cheaper than ordering a new modulator from Commodore (always assuming they agree to supply one!). If you find that it is the modulator and not the cable that is faulty, Commodore's new address is as follows:

Commodore Business Machines (UK) Ltd.,
1 Hunters Road,
Weldon,
Corby,
Northamptonshire NN17 1QX
Tel: 0536 205555.

Dear Tommy, **After reading about people's problems when using Pokes with a 16K Ram pack, I have decided to send you these Pokes. They can be used in direct or indirect mode.**

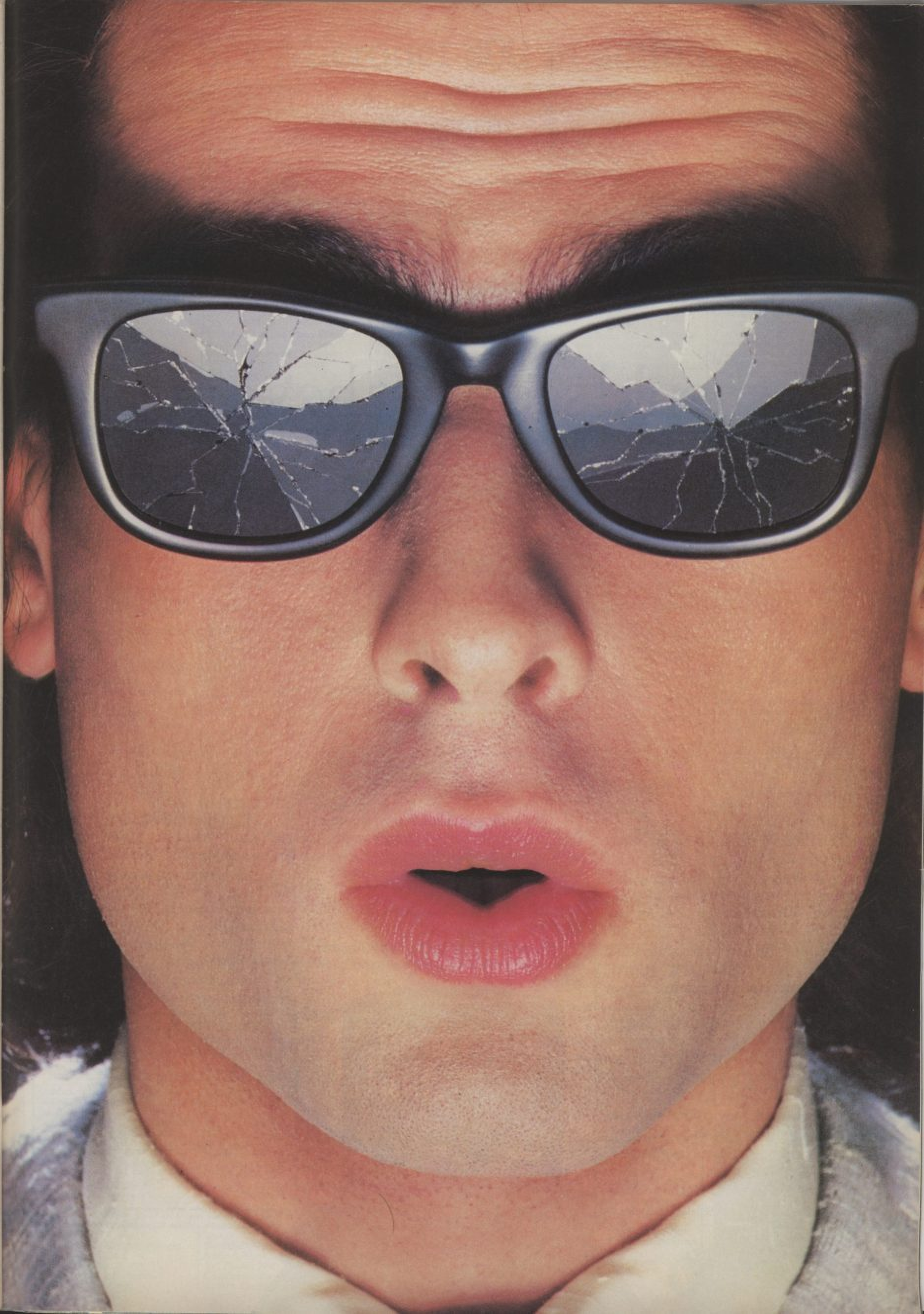
POKE648,30: POKE642,32
POKE641,0: SYS64824

The above allows you to use *all* the values of an unexpanded Vic, with a 16K Ram pack connected (including screen locations).

Can you help? I wish to know if it is possible to use a bought game, 3K (possibly machine code) with a Super-Expander cartridge, not a 3K Ram pack. I don't want to buy a game needing 3K before I know that I can use it.

I am afraid that the answer can only be a qualified 'yes'. The problem is that you get just slightly less memory when using a Super Expander than you do with a standard 3K RAM pack. This is because the cartridge itself uses some of the memory. The result is that if the game has been shoehorned in to run on a 3K expansion it may NOT work with a Super Expander cartridge fitted.

On the other hand, some software houses ensure that their programs will run with either, by limiting the games to the smaller of the two sizes of memory. I suggest you ask your supplier when you buy the game; he may be willing to load it in the shop to check, but provided you make it a condition of sale he should be willing to exchange it if it will not run.



See Micronet 800 in action.

AVON

Bath. Boots, 1 Marchants Passage, Southgate. Tel: 0225 64402.
Bristol. Avon Computer Rentals, 16 West Street, Old Market. Tel: 0272 550600.
Bristol. Boots, 59 Broadmead. Tel: 0272 293631.
Bristol. Laskys, 16-20 Penn Street. Tel: 0272 20421.
Keynsham. Key Computer Systems 42b High Street. Tel: 02756 5575.
Weston-super-Mare. K & K Computers, 32 Alfred Street. Tel: 0934 419324.

BEDFORDSHIRE

Bedford. Boots, The Harpur Centre, Harpur Street. Tel: 0234 56231.
Dunstable. Dormans, 7-11 Broad Walk. Tel: 0582 38302.
Leighton Buzzard. Datasine, 59 North Street. Tel: 0525 374200.
Leighton Buzzard. Milton Keynes Music & Computers, 17 Bridge Street. Tel: 0525 382504.
Luton. Hobbyte, Unit 16, The Arndale Centre. Tel: 0582 457195.
Luton. Laskys, 190-192 Arndale Centre. Tel: 0582 38302.
Luton. Terry More, 49 George Street. Tel: 0582 23391.

BERKSHIRE

Reading. Laskys, 118-119 Priar St. Tel: 0734 595459.
Slough. Data Supplies, Templewood Lane, Farnham Common. Tel: 2 820004.
Slough. Laskys, 75 Queensmere Centre. Tel: 0753 78269.
Slough. MV Games, 245 High Street. Tel: 75 21594.

BUCKINGHAMSHIRE

Bletchley. RAMS Computer Centre, 117 Queensway. Tel: 0908 647744.
Chesham. Reed Photo & Computers, 113 High Street. Tel: 0494 783373.

CAMBRIDGESHIRE

Cambridge. Boots, 65-67 Sidney Street and 28 Petty Curry Street. Tel: 0223 350213
Cambridge. Cambridge Computer Store, 4 Emmanuel Street. Tel: 0223 358264
Cambridge. Heffers Stationers. 19 Sidney Street. Tel: 0223 358241.
Peterborough. Boots, 40-42 Bridge Street, Queensgate. Tel: 0733 65352.

CHESHIRE

Chester. Boots, 47-55 Foregate Street. Tel: 0244 28421
Chester. Computer Link, 21 St. Werburgh Street. Tel: 0244 316516.
Chester. Laskys, 7 The Forum, Northgate Street. Tel: 0244 317667.
Crewe. Midshires Computer Centre, 68-78 Nantwich Road. Tel: 0270 211086
Ellesmere Port. RFR TV & Audio, 1 Pooltown Road, Whitby. Tel: 051-356 4150.
Hyde. C Tech Computers, 184 Market Street. Tel: 061-366 8223.
Macclesfield. Camera Computer Centre, 118 Mill Street. 0625 27468
Macclesfield. Computer Centre, 68 Chestergate. Tel: 0625 618827.
Marple. Marple Computer Centre, 30-32 Market Street. Tel: 061-427 4328
Stockport. National Micro Centres, 36 St Petersgate. Tel: 061-429 8080
Stockport. Stockport Micro Centre, 4-6 Brown Street. Tel: 061-477 0248.
Widnes. Computer City, 78 Victoria Road. Tel: 051-420 3333.
Wilmslow. Wilmslow Micro Centre. 62 Grove Street. Tel: 0625 530890.

CLEVELAND

Middlesbrough. Boots, 88-90 Linthorpe Road, The Cleveland Centre. Tel: 0642 249616.

CUMBRIA

Kendal. The Kendal Computer Centre, Stramongate. Tel: 0539 22559.
Penrith. Penrith Communications, 14 Castlegate. Tel: 0768 67146.
Whitehaven. P D Hendren, 15 King Street. Tel: 0946 2063.
Workington. Technology Store, 12 Finkle Street. Tel: 0900 66972.

DERBYSHIRE

Alfreton. Gordon Harwood, 67-71 High Street. Tel: 0733 836781.
Chesterfield. Boots, 35-37 Low Pavement, Market Place. Tel: 0246 203591.
Chesterfield. Computer Stores, 14 Stephenson Place. Tel: 0246 208802.
Derby. Boots, 1 Devonshire Walk. Tel: 0322 45886.

DEVON

Exeter. Boots, 251 High Street, Tel: 0392 32244.
Exeter. Open Channel, Central Station, Queen Street. Tel: 0392 218187.
Paignton. Computer Systems Ltd, 35 Hyde Road. Tel: 0803 524284.
Plymouth. Syntax, 76 Cornwall Street. Tel: 0752 28705.
Seaton. Curtis Computer Services, Seaton Computer Shop, 51c Harbour Road. Tel: 0297 22347.
Tiverton. Actron Microcomputers, 37 Bampton Street. Tel: 0884 252854.

DORSET

Bournemouth. Brook Computers, 370 Charminster Road. Tel: 0202 533054.
Bournemouth. Lansdowne Computer Centre, 1 Lansdowne Crescent, Lansdowne. Tel: 0202 20165.
Dorchester. The Paper Shop, Kings Road. Tel: 0305 64564.
Poole. Lansdowne Computer Centre, 14 Arndale Centre. Tel: 0202 670901.

ESSEX

Basildon. Basildon Software Centre, 78-80 Liberty Shopping Hall, East Square. Tel: 0268 27922.
Chelmsford. Maxton Hayman, 5 Broomfield Road. Tel: 0245 354595
Chelmsford. Way In Computers, 7 Village Square, Chelmer Village. Tel: 0245 467858.
Colchester. Boots, 5-6 Lion Walk. Tel: 0206 577303.
Grays. H. Reynolds, 28a Southend Road. Tel: 0375 31641.
Harlow. Harlow Computer Centre, 17 Staple Tye. Tel: 0279 22846.
Harlow. Laskys, 19 The Harvey Centre. Tel: 0279 443495.
Hornchurch. Comptel Computer Systems, 112a North Street. Tel: 0402 446741.
Ilford. Boots, 177-185 High Road. Tel: 01-553 2116.
Romford. Software Plus, 72 North Street. Tel: 70 65271.
Southend-on-Sea. Computerama, 88 London Road. Tel: 0702 335443.
Southend-on-Sea. Computer Centre, 336 London Road. Tel: 0702 337161.
Southend-on-Sea. Estuary Personal Computers, 318 Chartwell North, Victoria Circus Shopping Centre. Tel: 0702 614131.

GLOUCESTER

Cheltenham. Laskys, 206 High Street. Tel: 0242 570282.
Cheltenham. Screen Scene, 144 St. Georges Road. Tel: 0242 528979.
Gloucester. Boots, 38-46 Eastgate Street. Tel: 0452 423501.

HAMPSHIRE

Basingstoke. Fishers, 2-3 Market Place. Tel: 0256 22079.
Southampton. Business Electronics, Micromagic At Atkins, 7 Civic Centre Road. Tel: 0703 25903.
Waterlooville. GB Microland, 7 Queens Parade, London Road. Tel: 0705 259911.

HERTFORD

Hitchin. County Computers, 13 Bucklesbury. Tel: 0462 36757.
Potters Bar. the Computer Shop, 107 High Street. Tel: 0707 44417.
Stevenage. DJ Computers, 11 Town Square. Tel: 0438 65501.
Watford. Laskys, 18 Charter Place. Tel: 0923 31905.
Watford. SRS Microsystems, 94 The Parade, High Street. Tel: 0923 26602.
Watford. Watford Electronics, Cardiff Road. Tel: 0923 405588.
Welwyn Garden City. DJ Computers, 40 Fretherne Road. Tel: 96 28444.

HUMBERSIDE

Beverley. Computing World, 10 Swabys Yard, Dyer Lane. Tel: 0482 881831.

KENT

Ashford. DGH, 10 North Street. Tel: 0233 32597.
Ashford. Geerings of Ashford, 80 High Street. Tel: 0233 33366.
Bexleyheath. Laskys, 15-16 Broadway Shopping Centre. Tel: 01-301 3478.
Bromley. Boots, 148-154 High Street. Tel: 01-460 6688.
Bromley. Computers Today. 31 Market Square. Tel: 01-290 5652.
Bromley. Laskys, 22 Market Square. Tel: 01-464 7829.
Bromley. Walters Computers, Army & Navy, 64 High Street. Tel: 01-460 9991.
Chatham. Boots, 30-34 Wilmott Square, Pentagon Centre.

KENT

Tel: 0634 405471.
Gravesend. Gravesend Home Computers, 39 The Terrace. Tel: 0474 23871.
Gillingham. Regal Software Supplies, 49 High Street. Tel: 0634 579634.
Maidstone. Kent Micros, 51 Union Street. Tel: 0622 52784.
Rainham. Microway Computers, 39 High Street. Tel: 0634 376702.
Sevenoaks. Ernest Fielder Computers, Dorset Street. Tel: 0732 456800.
Shortlands. The Village House of Computers, 87 Beckenham Lane. Tel: 01-460 7122.
Sittingbourne. Computer Plus, 65 High Street. Tel: 0795 25677.
Tunbridge Wells. Modata Computer Centre, 28-30 St. Johns Road. Tel: 0892 41555.

LANCASHIRE

Blackburn. Tempo Computers, 9 Railway Road. Tel: 0254 691333.
Blackpool. Blackpool Computer Store, 179 Church Street. Tel: 0253 20239.
Burnley. IMO Business Systems, 39-43 Standish Street. Tel: 0282 54299.
Preston. 4Mat Computing, 67 Friargate. tel: 0772 561952.
Preston. Laskys, 1-4 Guildhall Arcade. Tel: 0772 24558.
Wigan. Wildings Computer Centre, 11 Mesnes Street. Tel: 0942 22382.

LEICESTERSHIRE

Leicester. Boots, 30-36 Gallowtree Gate. Tel: 0533 21641.
Market Harborough. Harborough Home Computers, 7 Church Street. Tel: 0858 63056.

LONDON

W1. Computers of Wigmore Street, 104 Wigmore Street. Tel: 01486 0373.
W1. HMV, 363 Oxford Street. Tel: 01-629 1240.
W1. Laskys, 42 Tottenham Court Road. Tel: 01-636 0845.
W1. Lion House, 227 Tottenham Court Road. Tel: 01-637 1601.
W1. Sonic Foto Micro Center, 256 Tottenham Court Road. Tel: 01-580 5826.
W1. Tomorrows World Today, 27 Oxford Street. Tel: 01-439 7799.
W1. Walters Computers, DH Evans, Oxford Street. Tel: 01-629 8800.
WC1. Transam Micro Systems, 59-61 Theobalds Road. Tel: 01-405 5240.
W8. Walters Computers, Barkers, Kensington High Street. Tel: 01-937 5432.
SE7. Vic Oddens Micros, 5 London Bridge Walk. Tel: 01-403 1988.
SE9. Square Deal, 373-375 Footscray Road, New Eltham. Tel: 01-859 1516.
Lewisham. Laskys, 164 High Street. Tel: 01-852 1375.
SE15. Castlehurst Ltd, 152 Rye Lane, Peckham. Tel: 01-639 2205.
EC2. Devron Computer centre, 155 Moorgate. tel: 01-638 3339.
N14. Logic Sales, 19 The Bourne, The Broadway, Southgate. Tel: 01-882 4942.
N22. Boots, 38-40 High Road, Wood Green. Tel: 01-881 0101.
NW3. Maycraft Micros, 58 Rosslyn Hill, Hampstead. Tel: 01-431 1300.
NW4. Davinci Computer Store, 112 Brent Street, Hendon. Tel: 01-202 2272.
NW7. Computers Inc, 86 Golders Green. Tel: 01- 209 0401.
NW10. Technomatic, 17 Burnley Road, Wembley. Tel: 01-208 1177.

MANCHESTER

Bolton. Computer World UK Ltd, 208 Chorley Old Road. Tel: 0204 494304.
Manchester. Boots, 32 Market Street. Tel: 061-832 6533.
Manchester. Laskys, 61 Arndale Centre. Tel: 061-833 9149.
Manchester. Laskys, 12-14 St. Marys Gate. Tel: 061-833 0268.
Manchester. Mighty Micro, Sherwood Centre, 268 Wilmslow Road, Fallowfield. Tel: 061-224 8117.
Manchester. NSC Computer Shops, 29 Hanging Ditch. Tel: 061-832 2269.
Manchester. Walters Computers, Kendal Milne, Deansgate. Tel: 061-832 3414.
Oldham. Home & Business Computers, 54 Yorkshire Street. Tel: 061-633 1608.
Swinton. Mr Micro, 69 Partington Lane. Tel: 061-728 2282.

MERSEYSIDE

Heswall. Thornguard Computer Systems, 46 Pensby Road. Tel: 051-342 7516.
Liverpool. Hargreaves, 31-37 Warbreck Moor, Walton. Tel: 051-525 1782.
Liverpool. Laskys, Dale Street. Tel: 051-236 3298.
Liverpool. Laskys, St. Johns Precinct. Tel: 051-708 5871.
St. Helens. Microman Computers, Rainford Industrial Estate, Mill Lane Rainford. Tel: 0744 885242.
Southport. Central Studios, 38 Eastbank Street. Tel: 0704 31881.

MIDDLESEX

Enfield. Laskys, 44-48 Palace Garden Shopping Centre. Tel: 01-363 6627.
Harrow. Camera Arts, 42 St. Anns Road. Tel: 01-427 5469.
Harrow. Harrow Micro, 24 Springfield Road. Tel: 01-427 0098.
Hounslow. Boots, 193-199 High Street. Tel: 01-570 0156.
Southall. Twillstar Computers Ltd, 7 Regina Road. Tel: 01-574 5271.
Teddington. Andrews, Broad Street. Tel: 01-997 4716.
Twickenham. Twickenham Computer Centre, 72 Heath Road. Tel: 01-892 7896.
Uxbridge. JKL Computers, 7 Windsor Street. Tel: 0895 51815.

NORFOLK

Norwich. Adams, 125-129 King Street. Tel: 0603 22129.

NOTTINGHAMSHIRE

Sutton in Ashfield. HN & L Fisher, 87 Outram Street. Tel: 0623 54734.
Nottingham. Laskys, 1-4 Smithy Row. Tel: 0602 413049.

OXFORDSHIRE

Abingdon. Ivor Fields Computers, 21 Stern Street. tel: 0235 21207.
Banbury. Computer Plus, 2 Church lane. Tel; 0295 55890.
Oxford. Absolute Sound & Video, 19 Old High Street, Headington. Tel: 0865 65661.
Oxford. Science Studio, 7 Little Clarendon Street. Tel: 0865 54022.

SCOTLAND

Aberdeen. Boots, 133-141 Union Street. Tel: 0224 585349.
Edinburgh. Boots, 101-103 Princes Street. Tel: 031-225 8331.
Edinburgh. Laskys, 4 St. James Centre. Tel: 031-556 1864.
Glasgow. Boots, 200 Sauchiehall Street. Tel; 041-332 1925.
Glasgow. Boots, Union Street and Argyle Street. Tel; 041-248 7387.
Glasgow. Tom Dixon Cameras, 15-17 Queen Street. Tel: 041-204 0826.

SHROPSHIRE

Shrewsbury. Clairmont Enterprises, Hills Lane. Tel: 3647 52949.
Shrewsbury. Computerama, 13 Castlegate. Tel: 0743 60528.
Telford. Computer Village Ltd, 2/3 Hazeldine House, Central Square. Tel: 0952 506771.
Telford. Telford Electronics, 38 Mall 4. Tel: 0952 504911.

STAFFORDSHIRE

Newcastle-under-Lyme. Computer Cabin, 24 The Parade, Silverdale. Tel: 0782 636911.
Stafford. Computerama, 59 Foregate Street. Tel: 0785 41899.
Stoke-on-Trent. Computerama, 11 Market Square Arcade, Hanley. Tel: 0782 268524.

SUFFOLK

Bury St. Edmunds. Boots, 11-13 Cornhill. Tel: 0284 701516.
Bury St. Edmunds. The Computer Centre, 1-3 Garland Street. Tel: 0284 705503.
Ipswich. Brainwave Micros, 24 Crown Street. Tel: 047 350965.

SURREY

Bagshot. P & H Electronics, 22-24 Guildford Road. Tel: 0276 73078.
Croydon. Laskys, 77-81 North End. Tel: 01-681 8443.
Croydon. The Vision Store, 53-59 High Street. Tel: 01-686 6362.
Croydon. The Vision Store, 96-98 North End. Tel: 01-681 7539.
South Croydon. Concise Computer Consultants, 1 Carlton Road. Tel: 01-681 6842.
Epsom. The Micro Workshop, 12 Station Approach. Tel: 0372 721533.
Guildford. Walters Computers, Army & Navy, 105-111 High Street. Tel: 0483 68171.
Wallington. Surrey Micro Systems, 53 Woodcote Road. Tel: 01-647 5636.

SURREY

Woking. Harpers, 71-73 Commercial Way. Tel: 0486 225657.

SUSSEX

Bexhill-on-Sea. Computerware, 22 St. Leonards Road. Tel: 0424 223340.
Brighton. Boots, 129 North Street. Tel: 0273 27088.
Brighton. Gamer, 71 East Street. Tel: 0273 728681.
Brighton. Laskys, 151-152 Western Road. Tel: 0273 725625.
Crawley. Gatwick Computers, 62 The Boulevard. Tel: 0293 37842.
Crawley. Laskys, 6-8 Queensway. Tel: 0293 544622.
Eastbourne. Boots, 15 Eastbourne Arndale Centre. Tel:

TYNE & WEAR

Gateshead. DP Supplies, St. Andrews House, Westfield Terrace. Tel: 0632 785068.
Newcastle-upon-Tyne. Boots, Eldon Square. Tel: 0632 329844.
Newcastle-upon-Tyne. Laskys, 6 Northumberland Street. Tel: 0632 617224.
Newcastle-upon-Tyne. RE Computing, 12 Jesmond Road. Tel: 0632 815580.

WALES

Aberdare. Inkey Computer Services, 70 Mill Street, The Square, Trecynon. Tel: 0685 881828.
Aberystwyth. Aberdata at Galloways, 23 Pier Street. Tel: 0970 615522.
Cardiff. Boots, 26 Queens Street & 105 Frederick Street. Tel: 0222 31291.
Cardiff. P & P Computers. 41 The Hayes. Tel; 0222 26666.
Swansea. Boots, 17 St. Marys Arcade, The Quadrant Shopping Centre. Tel: 0792 43461.

WARWICKSHIRE

Coventry. Coventry Micro Centre, 33 Far Gosford Street. Tel: 0203 58942.
Coventry. Impulse Computer World, 60 Hertford Street Precinct. Tel: 0203 553701.
Coventry. JBC Micro Services, 200 Earlsdon Avenue, North Earlsdon. Tel: 0203 73813.
Coventry. Laskys, Lower Precinct. Tel: 0203 27712.
Leamington Spa. IC Computers, 43 Russell Street. Tel: 0926 36244.
Leamington Spa. Leamington Hobby Centre, 121 Regent Street. Tel: 0926 29211.
Nuneaton. Micro City, 1a Queens Road. Tel: 0203 382049.
Rugby. O.E.M., 9-11 Regent Street. Tel: 0788 70522.

WEST MIDLANDS

Birmingham. Boots, City Centre House, 16-17 New Street. Tel: 021-643 7582.
Birmingham. Laskys, 19-21 Corporation Street. Tel: 021-632 6303.
Dudley. Central Computers, 35 Churchill Precinct. Tel: 0384 238169.
Stourbridge. Walters Computer Systems. 12 Hagley Road. Tel: 0384 370811.
Walsall. New Horizon, 1 Goodall Street. Tel: 0922 24821.
West Bromwich. DS Peakman, 7 Queens Square. Tel: 021-525 7910.
Wolverhampton. Laskys, 2 Wulfrum Square. Tel: 0902 714568.

YORKSHIRE

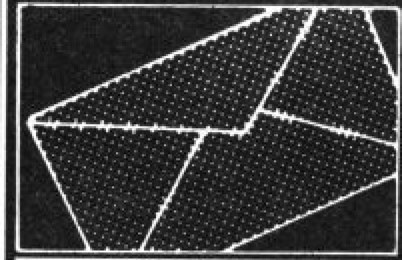
Bradford. Boots, 11 Darley Street. Tel: 0274 390891.
Leeds. Boots, 19 Albion Arcade, Bond Street Centre. Tel: 0532 33551.
Sheffield. Laskys, 58 Leopold Street. Tel: 0742 750971.
York. York Computer Centre, 7 Stonegate Arcade. Tel: 0904 641862.




BEYOND
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NEW
THE GAME WITH
32,000 SCREENS
NOW PLAYING ON COMMODORE 64
BEYOND
CHALLENGING SOFTWARE
COMMODORE 64 version
the LORDS of midnight
For the
COMMODORE 64
By Mike Singleton
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The Lords of Midnight is one of the most exciting games currently available.
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The Lords of Midnight is available now from better software dealers everywhere. Mail Order: Beyond, Competition House, Farndon Road, Market Harborough, Leicestershire LE16 9NR. Price £9.95 including P&P. Access & Barclaycard ring: 0858 34567.
Cheques & POs made payable to BEYOND.

LETTERS

This is your page: normally we write for you, but here we listen. Feel free to let us know what you think — about the magazine, about Commodore, about suppliers, about life, art, the meaning of existence or whatever. We don't print everything we receive, of course; but anything that might be of specific relevance or general interest will make it to these pages.



Scouse network

I am investigating the feasibility of creating a network system within the Merseyside Youth Training Scheme. The scheme operates from several different bases within the Liverpool area. Each one of these sites will shortly have its own Commodore 64 computer and printer.

I would like to link these sites to our Head Office 64 in a master/slave arrangement. Ideally this should allow each site to access desk storage/software from the Head Office/Master site plus have the capacity to receive/transmit electronic mail and messages.

I would be most grateful of any information you can provide relating to this idea and its possible implementation. I look forward to hearing from you shortly.

David Cobley,
Merseyside Youth Training,
Inner Temple,
Temple Lane,
Liverpool L2 5RS.

This is rather a tricky one for us. Any Commodore networking experts out there who could help?

Giveaway software

In the January 1985 edition of your mmagazine therer was an article entitled "No Dice!". In this article, some of the games were referred to as 'Public Domain Software'. Please could you tell me what this means, and where such software can be acquired.

Jonathan Platt,
5 Neyland Terrace,
Neyland,
Milford Haven,
Dyfed, Wales.

The term means that no only is there no copyright on such software, but that it must not be sold for profit. Although it's free, you usually need to be a member of a User Club to acquire it.

Apology speech

May I through your column apologise and thank for their patience all who ordered and had to wait for our Gola-Speech.

The delay was caused by faulty duplication. May I also thank Simon Stable who undertook the re-duplication speedily and efficiently and without whose help we would have been in great difficulties.

I. Elliott,
Gala-Soft,
116 Church Parade,
Canvey Island, Essex.

Vic adventures

Could anyone tell me if 'Savage Island' or 'Mystery Fun House' (Adventures), are available for the Vic-20 or 8K.Or for that matter, would anyone recommend a difficult adventure game for the Vic? Compliments for a good magazine,but couldn't you include more Vic-20 articles?

Niall Ó Cinnéide,
Dún Chasin,
Trá Lí,
Co. Chiarrai, Eire.

● What with the new C-16, the Plus/4 and the latest C-128 and Commodore Portable machines to think about, we're struggling for space. At least, Vic Victuals are still a cert.

Hi-Res Santa

I would like to congratulate you (Commodore User) and Melbourne House on your excellent game "Merry Christmas". I was amazed when I saw that the game was only 95p to Commodore User readers. I was even more amazed when I loaded my game to find truly tremendous graphics and animation. As you said in your description of the game the graphics are so stunning they wouldn't be out of place on a Christmas card. I have only one criticism though, and that is that we were not told in the magazine who to write the cheque out to. Please make this clearer in other offers. I would also like to congratulate you on your December (Christmas) issue of Commodore User. It helped me tremendously to choose my Christmas games.

Paul Moreton,
12 Draycott Drive,
Cheadle, Staffs. ST10 1NH.

Weird effects

As a member of the Association for the Scientific Study of Anomalous Phenomena I am interested in cases of anomalous computer effects.

Can I appeal to readers for any information, at first or second hand, no matter how bizarre, concerning unexplainable malfunction or unexpected output?

All accounts will be treated in strictest confidence, and should be sent to me at the address below.

Roger C Morgan
15a Kensington Court Gardens,
London W8 5QF.

Pass the puck

As a new owner of the 64, I would be glad if you or a reader could tell me if there is an Ice Hockey or Hockey game on the market, and where I could get it from, or perhaps someone has written one?

Steven Archer,
21 Chapter Road,
Strood,
Kent ME2 3PX.

● Yes, it's called Slap Shot and it's available from Anirog Software, and we'll be reviewing it next month.

A programmer writes

I would just like to say thank you for your very fair reviews in the February issue of *Dodo Lair* and *Fatty Henry*. As the author of both programs I sometimes feel very bitter about reviews which are inaccurate, from other magazines. I put a lot of effort into both programs and when you see a review saying that 'the main character looks suspiciously like a Vic graphics character' when in fact it is 16 by 16 pixels, user defined, multicoloured and animated, it tends to make my blood boil.

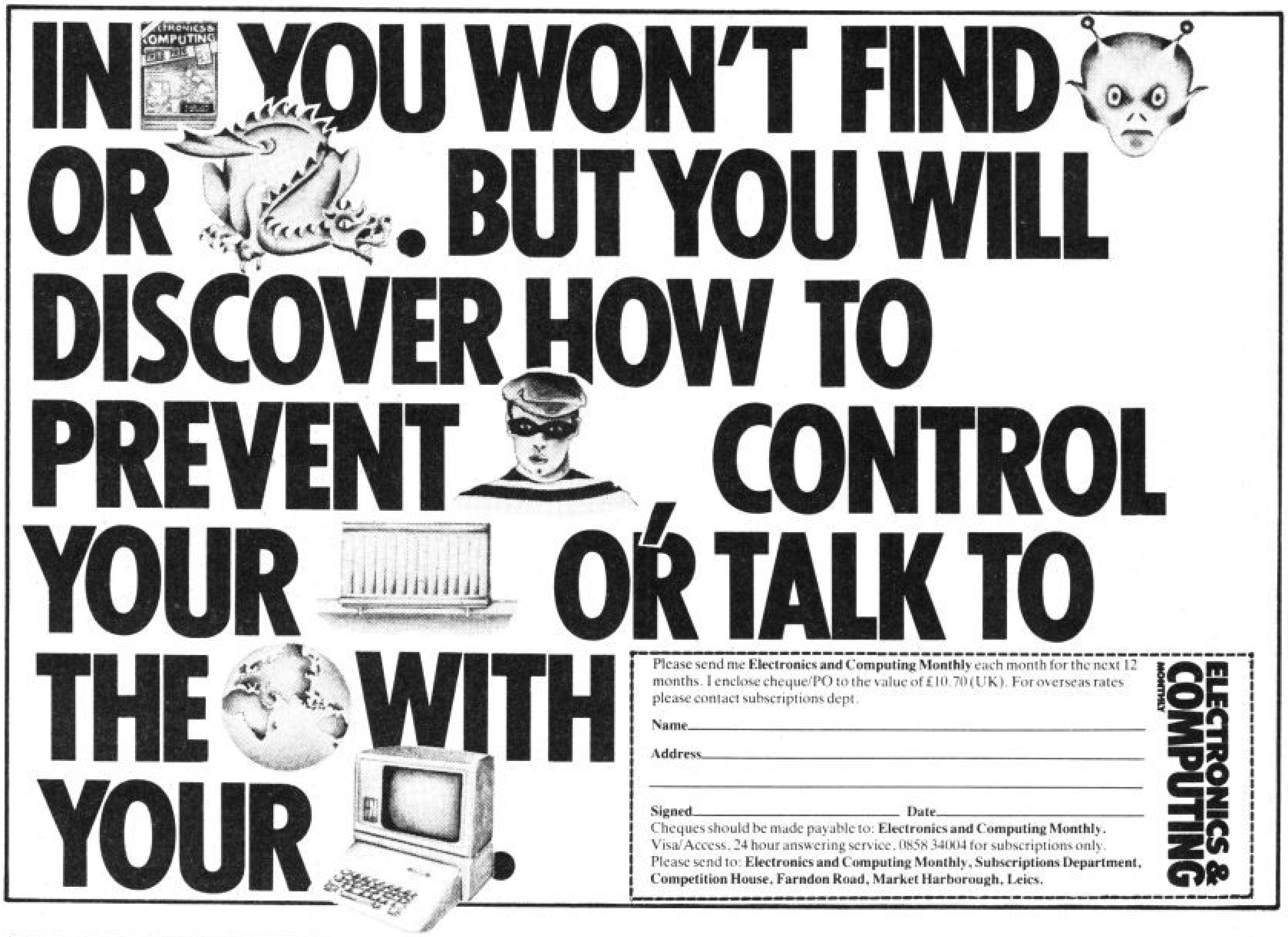
Thankfully *Commodore User* obviously bothers to play Vic games for a reasonable time (which I wonder how many other magazines do) and also assesses them in accordance with other Vic games, not with the 64.

I can understand different people having different opinions, but I was beginning to wonder if I came from the same planet as most reviewers!

One criticism I would make about your review section is that too much credit from a good review goes to the software house and you don't even mention the programmer/game designer. I would suggest you should print the name of the major contributors to the program above the software house, and if possible do a short interview with the programmer of the 'Screen Star'.

Pop groups' record labels are hardly ever known and it makes sense. For a start programmers are less likely to produce trash if their name is going to be printed next to its review. Also, consumers should not assume two programs from the same software house to be the same quality or style, but two programs from the same author are more likely to be. It would be in the public's interest, besides giving us poor programmers an occasional ego trip.

Peter Bradley,
The Firs,
Elm Park Road,
Pinner, Middx HA5 3LH.


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Adventure Helpline The Quest Line, a free service for adventurers, send s.a.e. to Colin Loosemore, 29 Rufus Gardens, Totton, Southampton, SO4 3TA. (0703) 871960 or Tony Treadwell, 41 Fernhill Road, Oxford OX5 1RR.

U.S.A. C64 User Group would like to ex-software and ideas with European groups or individuals. Prefer disk, but will consider tape. Respond to: Metro-Area Commodore Club, Box M, Mendota, Minnesoto, 55150 — U.S.A. Or call: (612) 778-8188.

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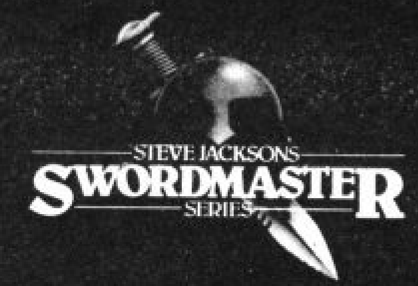
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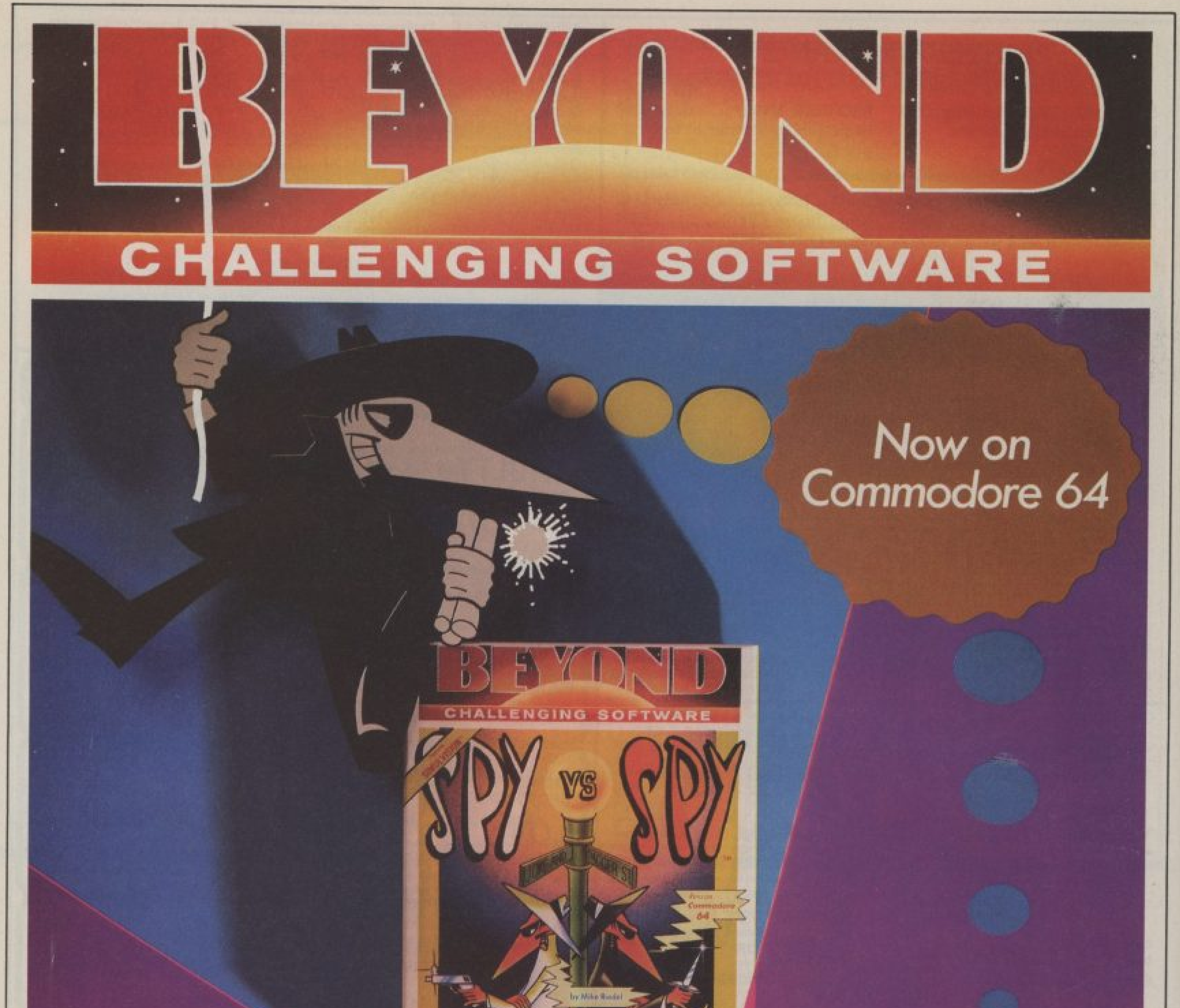
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